SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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METALLURGIC FURNACES.

A novel arrangement of apparatus has been invented by Mr W MOLLER, of New York. It consists in the combination in a metallurgic furnace of a retort placed into and surrounded by the brick wall of the furnace, a smoke flue extending from the fire place of the furnace around the retort to the smoke-stack, and an air-flue (one or more) formed in the brick wall of the furnace, or partly in the brick wall and partly in the sides of the retort, and open at one end to the external atmosphere, and communicating at the other end with the interior of said retort, so that the retort with its contents becomes highly heated by the heated gases emanating from the fire, while the air which passes through the air-flue also becomes heated, and as it enters the retort in this heated state it promotes the combustion of the sulphur, phosphorus, arsenic, and other like impurities contained in the ore without permitting the products of combustion to come in direct contact with the ore; also in the combination with a metallurgic furnace of two pairs of retorts placed in the furnace wall, a fire place in one end of the furnace wall, an arch above said fire place with openings in its sides and its top, smoke flues extending beneath the retorts and communicating with the lateral openings of the fire arch and with the smoke stack, smoke flues extending on the sides and tops of the retorts, and communicating with the opening in the top of the fire arch and with the smoke stack, and a damper for opening or closing the communication between the opening in the top of the fire arch and the lateral and top flues, whereby the operation of heating the retorts can be readily controlled; further, in the combination in a metallurgic furnace of two pairs of retorts placed into the furnace wall, a fire place in one end of the furnace wall, smoke flues extending beneath on the sides and over the top of the retorts, and communicating with the smoke stack and air flues formed in the furnace wall, and communicating at one end with the open atmosphere, and on the opposite end one with each of the retorts.

The features which Mr. Moller claims to be improvements are the combination in a metallurgic furnace of a retort placed into and surrounded by the brick wall of the furnace, a smoke flue extending from the fireplace of the furnace around the retort to the smoke stack, and an air flue (one or more) formed in the brick wall of the furnace, or partly in the brick wall and partly in the sides of the retort, and open at one end to the external atmosphere, and communicating at the other end with the interior of said retort. Secondly, the combination in a metallurgic furnace of two pairs of retorts placed into the furnace wall, a fireplace in one end of the furnace wall, an arch above said fireplace with openings in its sides and one opening in its top, smoke flues extending beneath the retorts and communicating with the lateral openings of the fire arch and with the smoke stack, and a damper for opening and closing the communication between the opening in the top of the fire arch and the lateral and top flues; and thirdly, the combination in a metallurgic furnace of two pairs of retorts placed into the furnace walls, a fireplace in one end of the furnace wall, smoke flues extending beneath on the sides and over the top of the retorts, and communicating with the smoke stack and air flues formed in the furnace wall, and communicating at one end with the open atmosphere, and at the opposite end one with each of the retorts.

ECONOMIC MALLEABLE BRONZE.

Bronze is now largely used for the manufacture of castings, and it has heretofore been sought to improve its quality by the addition of phosphor, which hardens the metal and renders it more homogeneous Certain experiments with phosphorus bronze have had special relation to the production of cast ordnance for artillery. Some experiments have also been made relatively to cast bells, and attempts have been made to manufacture wire and cartridge shells, but they were not proceeded with. The alloy heretofore used consisted of copper, tin, and zinc, like that used for making coins, but with a larger proportion of copper, and always with a proportion of zinc designed to make the metal malleable and soft. For bearings and other cast parts of machinery phosphor bronze has now come into general use. All the processes heretofore in use have remained unemployed, except for castings, for the reason that the phosphorus has been introduced in a quantity which is sufficient to harden the alloy, and consequently to deprive it of its natural qualities. Nevertheless, bronze containing a large proportion of tin has been considered but slightly malleable, especially gunmetal, which contains within a few units 90 per cent. of copper, and the remainder in tin, there being no zinc. This alloy cracks and splits when being rolled; it also splits in the furnace when first being heated or annealed; its surface frequently becomes covered with spots or stains of eliquated zinc. These inconveniences or defects are caused by a natural want of homogeneity, which arises from the tendency of the tin to become separated from the copper by eliquation.

To impart to the alloy of copper and tin, and especially to gunmetal, the qualities required to enable it to bear rolling and subsequent application to the manufacture of various articles is the object of the invention of Mr. Léon Letrange, of Paris. When bronze is being cast the qualities proper to the two metals of which the alloy is composed are obliterated by the presence of the oxygen abstracted from the atmosphere by the fused metals, but according to his process he frees them from the objectionable ingredient by introducing into the metallic bath a substance which has great affinity for oxygen—such as manganese or phosphorus—in a quantity which is just sufficient for absorbing the oxygen and carrying it off in combination to the surface of the bath, which is the reverse of what has hitherto been done—that is to say, adding a larger dose of manganese or phosphorus intended to harden the metal. The deoxidation of the bronze which he effects is analogous to that which is applied to iron in the well-known Bessemer process, in which at the end of the operation, when the iron is penetrated by oxygen, in consequence of the energetic action of the air introduced for the purpose of oxidising the foreign matters, manganese is introduced in the proportion required for being combined with the oxygen, and for carrying it off into the scoria. But he is very careful not to introduce a quantity of manganese or of phosphorus which would be sufficiently considerable to be taken into account in the alloy, as has been done by those who have heretofore operated upon castings. The manganese is introduced into the metal bath in the state of cupro-manganese previously combined, or phosphoret of manganese. The phosphorus which he prefers to the manganese, may be introduced in its natural state directly into the bath of copper, tin, or bronze, and incorporated by rapid stirring. It may be produced by contact of the melted metal by the decomposition of phosphorous material. He prefers to introduce it in the state of phosphuret of copper or phosphuret of manganese previously prepared, either into the molten copper before the tin is introduced, or into the tin intended for the alloy, or into the alloy at the moment of tapping. The bronze thus deoxidised becomes remarkably fluid when in fusion, and acquires when cold a malleability which allows it to be rolled, and then stamped, wrought, or otherwise worked like copper and brass. It possesses in the highest degree its natural qualities of elasticity, tenacity, and resistance to oxidation, a fine and close grain, and a colour resembling that of gold, which renders it capable of advantageously replacing steel, tin, copper, and its various alloys with zinc.

When a bronze of greater hardness and tenacity is required Mr Létrange adds to the alloy nickel, bromine, tungsten, wolfram, or other metals, which harden it without preventing its being malleable. Bronze thus produced is malleable if worked in a particular way; that is to say, the molten alloy must be cast in plates in copper moulds and annealed before being rolled. It is rolled cold, and annealed after each passage through the rollers; the pressure being light at first, and increasing with each subsequent operation. Malleable bronze thus prepared is suitable for stamping, chasing, or otherwise working; its grain is remarkably fine, close, and homogeneous, and is very sonorous. Bronze so made Mr. Létrange proposes to employ for the manufacture of large and small bells and gongs, electric bells, and clock bells, which hitherto have been made of cast bronze, which is liable to crack or break, and are more expensive.

Original Correspondence.

THE OLATHE SILVER MINING COMPANY.

SIR,—In the editorial note which you appended to my letter of Feb. 24, appearing in the *Mining Journal* of March 4, you invited a refutation of the adverse comments upon this company's property made by the Leadville Herald, Leadville Democrat, Leadville Chronicle, and Leadville Circular.

Subjoined are extracts from the Leadville Chronicle, Leadville Daily Herald, New York Daily Tribune, Mining Index, Rocky Mountain Review, Mining Record, and Leadville Democrat, which show that there are other and very different opinions entertained about the Olathe property, and the immediate locality in which it is situate, to those given in the newspapers to which you refer.

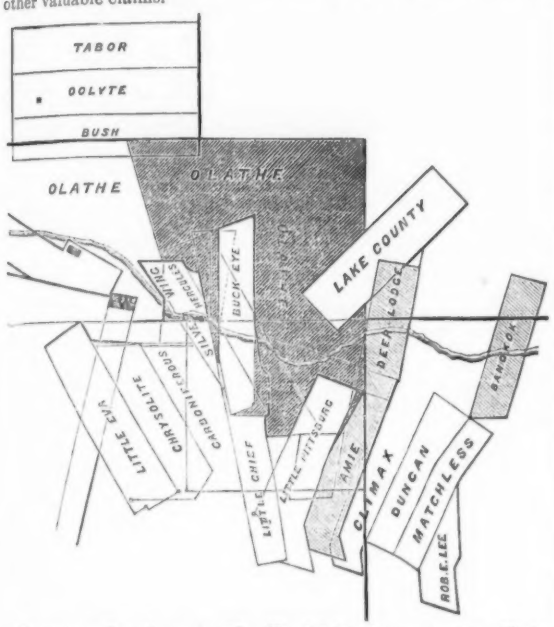
As you will observe by the extract from the New York Daily Tribune of the 25th ult., high grade ore has now been struck on the Olathe Company's eastern boundary; it had previously been found on the southern and northern boundaries. Looking to the character of the lodes which traverse this district (all flat lodes without any surface outcrop) it is difficult to understand on what theory a flat lode found on three sides of the Olathe claim should not extend under and through it.

It is a matter of regret to my directors, as it will doubtless be to you, that your investigations about the Olathe Company's property were not so extended as to embrace the favourable as well as the unfavourable comments of the local press.

HENRY KENDRICK, Secretary.

8, *Tokenhouse-yard, March* 14.

P.S.—Accompanying this letter is a sketch plan, showing the relative positions of the Olathe, Amie, Deer Lodge, Bangkok and many other valuable claims.



Extracts referred to in Mr. Kendrick's letter to the *Mining Journal*, March 14th, 1882.

From the "Leadville Chronicle," Sept. 12, 1881.

We believe that if it, the Olathe Company, perseveres, and works the shaft to great depth, it has as good a chance of striking mineral as Mr. Roudebush, or the combined companies on Fryer Hill, who also propose to sink a deep shaft. . . . . A capitalisation of $750,000 on an undeveloped property is now considered high in this section. Still we have the Casco still with us with no development, five millions capital.

Letter addressed to the Editor of the "Leadville Daily Herald" of Feb. 7, 1882, with reference to the capitalisation of the company.

Now, in respect to large capitalisation, is it without precedent? Glancing over the list of companies before me, it does not so appear. The following are some which do not appear to have ever paid a dividend, and I presume were organised on prospects just as the Olathe was. I find the capitalisation of the Bald Mountain to be ten millions; the Big Pittsburg, twenty millions; the Buckeye, two millions; Carbonate Hill, four millions; Colorado Central, three millions; Gold Placer, five millions; Miner Boy, five millions; Tabor Mine, five millions; and the Oolite, two and a half millions.

In comparison the capitalisation of the Olathe by the British at $750,000 does not appear to be criminally out of the way, and I do not suppose the Leadville press have abused Mr. Tabor very much for placing the capital of the Oolite (which is north of the Olathe, and more distant from any paying mine, with less acreage) at three times as much as that of the Olathe. * * * * The assertion now made that the holes on the Olathe property have been abandoned, and, therefore, the property is worthless, is not in keeping with any intelligent theory, nor justified by any existing facts. The truth of the matter is the holes were abandoned for two reasons. First, because the prospectors failed to find mineral near the surface, and were financially unable to continue the work; and, second, when the patent to the property was issued they had no right there, and like decent people left. Suppose the Wolftone had been abandoned even after sinking 800 ft., by far the lowest level ever penetrated in the camp, would such abandonment have proven to the satisfaction of Mr. Stotesbury or Mr. Ford that the 40 ft. of mineral now exposed was not there, and the property worthless? If I understand anything at all it is that the ore-bodies of Leadville do not crop out at all, that mineral is "where you find it," and that the discoveries have been one surprise after another until nothing is a surprise any longer I have read in the Leadville papers some glowing accounts of the exceeding rich strikes made by Chicken Bill in the Oolite shaft, and by others in the Bob Ingersoll and the Oregon Boy, Roudebush, &c., all in low ground, and the projectors highly congratulated upon their success. Now, if this is all a myth, and these places are abandoned, then the Leadville press are responsible for misleading the British public, and the American public, too, for that matter.

But, on the contrary, if the Oolite is a mine, and the Ingersoll, Oregon Boy, and Roudebush (down towards Malta) are mines, and no one will deny that the press heralded them as immense strikes, then the Olathe, which lies between some of these and the great producing mines of Fryer Hill, is undoubtedly valuable.

In conclusion, I think you have done the British, and the promoters of the Olathe Company, the mining public, and especially Leadville, manifest injustice and injury. The company's prospectus was criticised because it was very elaborate, handsome, and in tints; that it had more to say about adjoining properties than its own. Well, as to that, promoters usually present their scheme in the most attractive manner, and pray why not? And if the property to be promoted has only a prospective value, made so by its adjoining other good properties, how can that be reasonably objected to?

I have never, nor has any of the Ouray Company, ever represented that the Olathe was anything but a prospect, nor does the prospectus of the Olathe Company, about which so much has been written, represent anything else. Mr. Carter, who has the position of a gentleman of standing and good business connections in London (who is ridiculed, insulted, and slandered by the "Chronicle") in his report does not claim anything more of it, nor does Mr. Taylor, the London expert; nor does Mr. J. Fitz-Brind, of Leadville, who has quite recently written a report favourable of it. But they all agree that if deep shafts are sunk, and pumps of ample capacity are employed, that the Olathe chances are as good for results as were the Matchless, Duncan, Amie, Little Pittsburg, or R. E. Lee, before they struck the mineral.

The following is extracted from the New York "Daily Tribune," Feb. 7, 1882, and confirms the previously conceived idea that in the immediate neighbourhood of the properties adjoining the Olathe placer a second ore body would be found underlying the present known deposits:—

It is officially stated that the Little Chief management decided some time ago to push development work directly beneath the floor of the great ore body which made the reputation of the mine, and which extended from above 10 ft. from the surface down 82 ft. This ore body was found at the centre of the Little Chief claim on its more elevated ground. About two years ago a shaft was sunk directly under to the depth of 93 ft., and stained porphyry, lime rock, and iron carbonates were found, which gave small assays of silver and a fair percentage of lead, but work in this shaft was then discontinued until recently. On resuming work two drifts running from the bottom of the shaft, 204 ft. from the surface, disclose mineral under conditions which it is claimed proved the long-sought second contact on Fryer Hill, and indicate ore bodies in the Little Chief at a lower depth. The Little Chief ground has in no other part been prospected 200 ft. below the surface, while some of the most profitable workings in the Leadville camp are at a greater depth

The "Mining Index" of Feb. 4, 1882, speaking of the expectations of future discoveries and of the superficial character of the present developments at Leadville, says:—

It is evident to all familiar with the formation about Leadville that there is yet in store for this camp one of the greatest booms ever recorded. The developments everywhere show more plainly each week that the exploration and prospect work is very superficial, and that only the deposts of mineral near the surface have been opened. Not one in a hundred of Leadville's miners and prospectors yet have a correct idea of characteristics of the vast ore shoots found in the contacts here, much less any definite opinion regarding the source.

The "Rocky Mountain Review" of Feb. 4, 1882, referring to the opinions of contemporaries as to the worthlessness of the Olathe placer, says:—

From all the facts that have come to our notice we have long since come to the conclusion that the property of this company, as well as that of the Ouray Discovery and Mining Company, near by, is valuable.

The "Mining Record" of Feb. 11, 1882, referring to the wonderful productiveness of many mines which prior to their development had been stated to be utterly valueless, writes:—

Nor would it be difficult to mention many properties subsequently proved of great value which had been reported upon unfavourably. Personal interest and selfish considerations too frequently sway the professional mining expert and engineer, as they do men of other avocations. So the safest rule when the prospect for a mine is clearly a good one is to apply the test of development. As we understand it, Prof. Jenny once expressed serious doubts of the value of the Black Hills region. Now, under the light of the developments made in the Homestake, Deadwood Terra, Father de Smet, Giant, and Old Abe, he is quoted as saying that that is "the best mining section in the world." The Bengal Tiger, a mine in that quarter, was for a time bonded to the Homestake Company, but afterwards given up upon the advice of their able experienced superintendent as of no value, and yet subsequent developments have shown it to be a rich mine abounding in gold. The Ontario at one time or in the prospect stage was pronounced of little or no value. Intelligent development has resulted in a product of more than $9,000,000, with every promise of long continued productiveness. We might cite many other illustrations.

In reference to the question as to the continuity of the Fryer Hill contact into the district north of Fryer Hill, in which district the Olathe placer lies, the "Leadville Democrat," of Feb. 4, 1882, says:—

During last month the mines on Fryer Hill have shown up very well in comparison with the later months of last year, during which the prospects did not look very bright for want of development, but recently we have had much pleasure in recording several new strikes and improvements in various parts of Fryer and Yankee Hills, which for the most part have led to the encouragement and opening of numerous other claims, many more of which we hope to see worked.

In our opinion the vast amount of territory situated north of Fryer and on Yankee Hill, which has hardly been prospected, and under which we see no reason why the great ore deposit, that has already produced such abundant wealth, should not continue through this section of the country, but we see every reason for the ore-body to be there. A number of small prospect shafts have been sunk, and are abandoned for the most part from lack of means to carry out the sinking. In most cases we think heavy and costly machinery would have to be employed, but the undertaking deserves the investment of capital for the accomplishment of the work. The most eastern part of the hill that has been worked to any great extent is in the Alleghany, which proves the continuity of the Great Fryer Hill contact, and now that ample machinery has been put in for drainage and hoisting purposes, we will look forward to development proving up a mineral wealth which will be of great importance to the future prosperity of Leadville; in fact, we cannot reflect on these new enterprises, which are gone into on a business-like basis for the development of the great resources of the surrounding hills of our carbonate camp, without coming to the conclusion that a very large number must be brought to a successful issue, more particularly where such enterprises are carried on for legitimate business, and not for the benefit of a few stockjobbers or schemers, who line their own pockets at the expenses of the million, and never intend to put a dollar of their earnings into the actual working of an enterprise. But where a vein can be traced and followed into a mountain for a long distance, as is this great ore deposit of Leadville, we cannot do otherwise than encourage capitalists to invest in undertakings of this nature.

In corroboration of the views expressed by the "Leadville Democrat" and as to the probabilities of carbonates being found to exist north and west of Fryer Hill in ground of less promise than the Olathe placer, the "Leadville Herald" of Feb. 1, 1882, says:—

With a slight exception all the money expended in development on the Peoria (this mine lies to the west of the Olathe property) up to last August was paid out individually by Mr. Clint Roudebush, when an interest was sold to Homer Pennock for 840,000, and he has since paid his proportion of the expenses. Last summer, owing to a large quantity of water coming into the mine, sinking the shaft was abandoned, and a drill was put at work. This was driven down to a depth of 259 ft., when contact was reached, and the drill was continued in contact for 24 ft. This was shown from the core taken from the borings. The sand pump then became stuck fast, and after weeks of trial to release it there seemed no course open but to commence drilling again, or to resume sinking the shaft. The latter course was chosen, and two new pumps and two engines were put up.

At first the work was prosecuted by miners hired by the day, until a depth of 208 ft. was reached, and then a contract was let.

The first contract of 25 ft. has just been completed, and leaves the shaft at a depth of 253 ft. A new contract has now been let to sink for 50 ft. more, and it will likely reach the contact, as exposed by the drill, in 26 ft. Everthing is working satisfactorily and constantly in the shaft, and there will be no delay unless occasioned by breakages in the machinery.

This venture should meet the approval of all Leadville people. It is the development of an immense tract of territory, as yet beyond the lines where paying mineral is found. If successful, it will cause an excitement and furore about Leadville that will be far greater than ever in the past.

The following statement extracted from the New York "Daily Tribune" of Saturday, Feb. 25, 1882, conclusively disposes of the theory that the Olathe property is out of the run of the ore:—

Late developments in the north workings of Amie are very important. The Deer Lodge shaft has 4 ft. of high grade ore in a drift opened to the line. The mine began shipping ore yesterday, and as soon as the ground has been opened further the shipments will be large. It is believed that the management has known of this large body for a long time, and has kept the fact concealed, so as to depreciate the stock.

The Deer Lodge is north of the Amie, and both of these mines adjoin the eastern boundary of the Olathe property. The Bangkok which is a little to the east of the Deer Lodge has on the authority of its principal proprietor proved by means of the rock-boring drill the existence of the ore body in that claim, and a shaft is now being sunk upon it.

In the New York "Daily Tribune" of Feb. 27 there is published the following despatch from Leadville dated Feb. 25:—

Superintendent Van Wagenen is getting his ore from the north workings of the Amie, 100 ft. from the Deer Lodge claim. The latter is also in ore near the Amie line. There is a large amount of undeveloped ground in the north part of Amie—Amie shipped 6 tons of ore on Thursday. An assay yesterday yielded 1742 ozs. of silver per ton.

[The sketch plan annexed has been compared by us with the map of the district, and with the Government Survey attached to the Patent, and corresponds therewith—ED. *M.J.*]

BRITISH ENTERPRISE IN BRAZIL.

SIR,—Dull as mining matters seem to be in London, perhaps an occasional letter from Brazil may not be without interest to some of the readers of the *Mining Journal*, who otherwise must wait for a prepared board meeting and the customary speeches of the Chairman, vote of thanks, &c. On reading some of these reports of meetings the shareholders appear to be kept in their places by the board and the monitors, like scholars at their lessons; information such as in the minds of the instructors appears proper is given, and all passes off quietly as possible. I returned to Brazil late in December last, and after hearing the gossip, and learning all the facts I could touching mines in which Europeans are interested, I give you a letter. Just now the interest centres on the judgment given in the case of the Catta Branca slaves, &c., the company, St. John del Rey, and the large sum of money to be paid. Plenty of lawyers are engaged in it, directly or indirectly. A fat fowl to be plucked. The blacks who can neither read nor write know all about the St. John del Rey "reserve" fund, and they are tenderly looked after by the legal fraternity. While I was examining some work at one of the mines of the French syndicate, two of these late unfortunate—now fortunate—blacks received a message from a lawyer of Ouro Preto to come and make up their claim. A messenger sent mounted from a great lawyer to a poor labouring black, who is like a ward in Chancery, with money to be spent. Such is life. Your English shareholders in this mining company are going to do the just thing now that they are forced to do so; they are to pay back wages to a people who, the Courts say, were knowingly kept in cruel bondage. It is said that they will try to punish somebody—who I don't know—for keeping the people in bondage. Now is seen the advantage of having an independent correspondent; had I been in this country years ago the probability is that the shareholders of the St. John del Rey Company who read your valuable Journal would have known of this affair, and the sin and shame of the business would have been spared them. I fail to see that anyone "spoke in school," and the meetings twice a year were held without one word of reference to the proceedings in law going on here. I suppose the shareholders will inquire into the matter now, and know why they have been kept in the dark so long.

Dr. Jacintho Dias, who has the matter in hand, is a personal friend of the Emperor, who was entertained by him at Sabará last year. All the world knows the Emperor's views and his horror of slavery. There will be no trifling. Since my return I have visited Raposos, and St. John or Morro Grande, Rossa Grande, Morro St. Anna, and Passagem. Raposos is situated on the line of the Dom Pedro Railway, which is being constructed with considerable rapidity. It is about three miles from Morro Velho and the St. John del Rey Company's mine. This property has been much talked about—talked down by those who are opposed to new mining enterprises other than their own.

The Raposos Mines are in charge of Capt. Henry Dale, who resigned the management of the Cuiaba Mines of the St. John del Rey Company to accept this engagement. Prospecting work only is now going on, but the main shaft gives 8 or 10 tons of fine ore daily. No stoping is done. The ore is from the shaft alone. A tunnel has been started at a point below to cut all the chimneys which have been worked to a depth of 20 to 50 ft. Mr. Dale is confident that there is a great mine near at hand. The ore gives from 8 to 9 oits. per ton in gold, and it is easily treated. Water-power abundant, and there is every facility for economical work. Labourers and good miners apply nearly every day for situations near Rossa Grande. The French syndicate before mentioned are exploring some mines which show very fine ore. Thirty-five men are employed. The underground work is in charge of Capt. Odgers, who left Cuiaba, or is now leaving, to enter into this engagement. Of this property more next month, when I am to see the ore tested by the mill process. Capt. Eslick, who was for so long a time mine captain for St. John del Rey, and resigned to manage work at St. John or Morro Grande, is washing off a hill to uncover a line of jacotinga which is known to exist. Several samples of the sand washed for me gave a quantity of coarse gold to each pan. Three miles of good canal or ditch has been made, and a large stream of water is brought over the works at great elevations. Forty-eight men are employed, and the money is furnished by the French syndicate. I did not visit Pari, but all goes on well it is said. Dom Pedro North del Rey slow, as usual, but it is not the fault of those who are in charge or at work. Making bricks without straw, as the children of Israel were commanded to do, was a small matter compared to working to open and unwater such a mine as this without money. A shrewd shareholder in this company says (in the *Mining Journal*) put Mr. Haymen in as Chairman and all will go well, the mine will pay dividends again, but let me suggest that he brings in a good sum of the Date Coffee money. It is customary to change managers, chairman, and even workmen when a mine does not pay. The case here is plain. Human aid will not avail without money. Your new Chairman may be pure and spotless as was Cæsar's wife, but he cannot make work go on properly without money. The question is simply one of unwatering and clearing up the mine. There is gold in the bottom, but by re-organising and not being too heavily weighted, only will dividends be earned.

At Passagem the mill has been delayed for want of timber, a good force of miners are opening the ground below; I took five samples of ore from the bottom. The lines are scattered, and the average of the ore is low; the mine is well situated for economical work, and with the mill it can be extensively prospected. I saw assays of 30*l.* to the ton of ore, selected of course. The near approach of the railway to the heart of the province is enlivening business, and it will help the mining interests. A great diamond mining company—French and Brazilian—has been formed, and I hear that operations are soon to be commenced. Look out for a fall in the price of precious stones. We intend to have railways all over Brazil, to use only the electric light, and to commence specie payments; possibly we may raise our potatoes and onions, which are now brought from Europe, but we must be patient. These things cannot all be done in one day.—*Ouro Preto, Feb.* 11. MINAS.

FRONTINO AND BOLIVIA COMPANY

SIR,—We are threatened with a sort of internecine war in this company. In January last a certain clique, caucus, or coterie, whichever cognomen they may be pleased to adopt, began this internecine strife by the issue of a circular, which I must say was moderate in tone. Of the 20 names appended to this circular nine appear to be members of the Stock Exchange. I, therefore, presume that this clique has been got together for Stock Exchange purposes. At the meeting of the company the moderate tone of the circular was quite forsaken, as a somewhat violent attack was made on the directors, and more especially on the chairman. The object of these proceedings soon became apparent, the object being to force two additional directors on the board. It was said one or two, but no doubt the larger number was intended. I do not know if two members of the Stock Exchange were the gentlemen intended to be added to the board, but if so I for one should energetically oppose any member of that Exchange, as well as their nominees, as I believe would a large majority of the shareholders. The point upon which they mainly relied was the appropriation of the profits to capital account. It is the easiest thing possible to find fault, but I wonder what would have been the condition of our property if the management had been in the hands of a board formed by members of this clique, who would, I presume, if they had been consistent, have refused to allow any of the profits to have been used in cases of urgent necessity, and so have allowed the mines to run towards ruin. Besides, the chairman read a letter which had been written to the superintendent embodying the points which were pressed by Mr. Leals on the part of the clique. We are now threatened with a special meeting for the purpose of forcing two nominees of this clique on the board of directors, the result of which will be, by producing antagonism and confusion, to injure the value and prevent the early development of our property.—*March* 17. ARGUS.

RUBY AND DUNDERBERG MINE.

SIR,—The letter of "Old Shareholder" in last week's Journal on the above mine is I believe a very correct account, and his estimate of the value of the old shares (10*l.* paid) rather low. A friend who has been to the district gives me a most favourable account of the Ruby and Dunderberg Mine. I fully expect the shareholders to receive handsome dividends. People in this country are so accustomed to small lodes that they fail to at once realise the value of a lode 40 ft. deep. The Richmond has paid its shareholders over again; they must not complain if the mine is now less prosperous. The Ruby and Dunderberg I believe to be fully equal to Richmond, and the directors appear to have ample funds to develope the mine.

OBSERVER.

EUREKA (NEVADA) MINING DISTRICT.

SIR,—I beg to enclose you my usual budget of news received from this mining centre:—

There is not a place in Nevada where the price of real estate keeps up as well as in Eureka.——Superintendent Goss, of the Eureka and Colorado River Railroad Company, arrived from the East Sunday night.——Over 300 mines in Eureka have produced from $100 upwards, the upwards meaning in several instances millions of dollars. Of what other mining districts can as much be said?——The new track from the E. and P. R. R. to the Richmond lead pile will economise a large amount of teaming.——It was reported yesterday that ore had been found in the 12th level of the Richmond Mine. We were unable to learn particulars.——During the month of January the Richmond Company shipped bullion amounting to $102,496·92.——There are 130 miners now doing tribute work in the Eureka Consolidated Mine, and probably there is a greater number employed in the Richmond Mine.——The process of warming up the new furnace at the Eureka Consolidated Works began yesterday, and it is expected that smelting will commence about the first of the coming month. This is an indication of livelier times for Eureka. Other enterprises will start up if the cold weather will ever quit.——From the best of authority we learn that is not the intention of the Eureka Consolidated Company to start up another furnace at present.——Following are the returns from a lot of ore worked at the Eureka Consolidated furnaces from the Queen Mine at Silverado, and owned by the Jones Brothers:—First-class netted per ton, $721·03; second-class, $384·86; third-class, $135·10. This is a pretty good showing from a little outside district.

The Eureka Tunnel and Mining Company, although only a prospecting claim, has realised from ores extracted from the mine and shipped to the Eureka Consolidated reduction works since Feb. 1 the sum of $4825·19. Yesterday being pay-day, the company disbursed $4147·09 for labour and supplies for the month of January. The company hopes to do better for the remainder of the month than for the first part. Anyway, this is not a bad showing for a mine that is not developed. Following is report of work done at the Eureka Tunnel for the week ending Feb. 11: South drift in winze has been advanced 15 ft. in hard blasting ground, and following a mere seam somewhat stained, which has improved daily until yesterday, when we came upon a well developed stratum of exceedingly rich ore (black metal) about 4 in. thick, pitching south at an angle of 45°. A sample of this ore, assayed by the company's assayer, gave $3062·18 per ton. The Eureka Tunnel will commence shipping again to the Eureka Consolidated to-morrow.——The Ruby-Dunderberg Company are working 22 men in their mine.——From the Queen Mine, in Silverado district, 4 tons of ore was taken to the Eureka Consolidated works yesterday. Good judges claim that it will net the owners $300 per ton. The owners of the ore think it will pay more.——There is a large amount of machinery for the Geddes and Bertrand new mill lying at the depot. It will be removed to Secret Canyon as soon as the roads will permit.——All repair to the Metamoras hoisting works have been completed, and it is reported that mining will be commenced this week. The hoisting works of the Metamoras Mine have been completed, and regular mining was commenced yesterday with a force of 10 men, under the foremanship of Mr. John McNaughton.——Another shipment of ore came in yesterday from the

Bay State Mine at Newark. We learn that the mine is looking exceedingly well.—The old Lemon mill is almost entirely taken down, and will be removed to Hot Creek in a few days.—The Bowman Company made another shipment of ore yesterday.

London, March 16. RUBY HILL.

HUDSON'S BAY SHARES.

SIR,—In reply to your correspondent "Observer," allow me to say that the steady rise is entirely caused by Canadian buying. The Canadians, as he says, are very shrewd in all American land matters, and when they buy four of every five shares sold it is probable the sellers will have cause to regret having parted with their property at prices far below its value.—*March* 13. WINNIPEG.

CALLAO BIS GOLD MINE.

SIR,—Will any director or initiative shareholder kindly give the outside shareholders a little information about the Callao Bis Gold Mine? A short time ago a director (Mr. Davis) went out to inspect, and telegraphed that the Callao lode went through Callao Bis Mine, but as this probability was announced in the original prospectus this intelligence can scarcely be looked upon as new. The present dearth of information is not encouraging, and the fact of the shares being offered at something like 40 per cent. discount is discouraging, but perhaps someone can explain away the doubts and fears of——

G. R.

THE NEW CALLAO COMPANY.

SIR,—The British "lamb" is supposed to be in season when a parliamentary election is in progress. He has, however, recently taken to assert his presence on other occasions, and intrude himself into the presence of shareholders when an unseemly fray usurps the place of deliberate discussion. In obedience to an invitation I attended a meeting of the above company at the Cannon-street Hotel, on Tuesday, to hear statements as to its position and prospects. At the entrance to the room I was surprised to find an excited crowd clamouring for admission, which was refused on the ground—so far as I could ascertain—that they had no real business there. Their exclusion was evidently not for the purpose of securing unanimity within, as from the constitution of the meeting it was apparent that great diversity of opinion prevailed. The proceedings had not far advanced before the bleatings of the "lambs" in the corridor increased in volume and intensity, and covered by a manœuvre from some of their friends who had evaded the ordeal at the door and got inside, they successfully stormed the approach, and by a well concerted rush took forcible possession of the room.

It required but a cursory examination to see that these persons could not be shareholders in the New Callao—or, indeed, in any other company—but for the most part consisted of the unsavoury looking loafers who haunt our courts of justice and other public places for want of better employment. I was surprised to find the secretary of the company evidently justifying his qualification for the post to which he has been recently promoted at the head of a band who would have done honour to Donnybrook. Of course, all rational discussion was at an end, and notwithstanding the praiseworthy and vigorous remonstrances of Major Fortescue, the chairman of the board, who vainly endeavoured to calm the tumult, the meeting was brought to an abrupt termination.

It is high time, Mr. Editor, that this rowdyism was suppressed, otherwise our public meetings degenerate into a farce, and the legitimate expression of *bonâ fide* interests an unmeaning and purposeless formality.—*March* 16. ONE WHO WAS PRESENT.

NEW CALLAO COMPANY.

SIR,—I attended the meeting of the New Callao Company called by the directors on Monday last, and was not a little surprised to hear the Chairman admit, in answer to a question by Mr. Beall, that the property of the company was 150 miles west of the El Callao and Callao Bis Mines. It was stated in the prospectus that the mine was to the west and in the neighbourhood of these two latter estates. Probably some of your readers can give some specific information whether at such a distance it is probable that the same conditions co-exist. By a parallel process of reasoning we might be justified in sinking a shaft for coal on Hampstead Heath because of the existence of a coal vein in the Forest of Dean.

London, March 16. AN ANXIOUS SHAREHOLDER.

NEILGHERRY GOLD MINING SYNDICATE.

SIR,—I observe a letter published in the Journal with reference to this company, and can fully endorse the views of the writer. I, in common with others, was invited to subscribe for shares with the understanding that certain property would be purchased in India, and on a company being formed to work the reefs contained therein we should get a return for the money advanced; but two years have elapsed and we have not received a penny piece. I would suggest some shareholder in London, who feels aggrieved, should invite the co-operation of his fellow-shareholders with a view to taking joint action to seek redress for what I consider our wrongs.

ANOTHER SHAREHOLDER.

MYSORE COLAR GOLD (?) FIELDS.

SIR,—Referring to the letter of "X. Y. Z.," in the Supplement to the Journal of Feb. 25, which I have not been able to pay attention to before, he appears to think me more dangerous to my friends than to my foes, and thinks me hard on "poor Capt. Moon" concerning the copper pyrites, &c. It is very evident that "X. Y. Z." is not one of those affected persons who wear green spectacles with a heavy gilded rim around them, or he would have noticed the irony of my remarks on that point, and considered how preposterous such an idea would be to suppose that a man of Mr. Moon's age and experience would not know the difference between copper pyrites and gold. If "X. Y. Z." will carefully read Mr. Moon's letter he will find that Mr. Moon distinctly states that his object in writing his letter was not to champion me, but to defend himself from the insinuations which had been made to him that he was not working on the run of the Colar-Mysore lodes; while, at the same time, he was really working on the largest outcrop of quartz on the whole field—and the next largest outcrop on the field is close to Nancarrow's shaft in the Great Southern Mysore claim, nevertheless I would not give a five-pound note for all the gold contained in a thousand tons of such stuff, or, in fact any quartz on the field.

Mr. Moon's letter, inasmuch as it champions me, only shows the kind of managers who are or would be allowed to remain on the field are those who pull with Gen. Beresford, or act according to his dictations. "X. Y. Z." states—"There is a noisy clique of disappointed failures who are attempting to re-establish their credit and injure those who dismissed them by disparaging in every way, publicly and privately, the mines which their incompetence have already injured, and the mining field which was the scene of their own failure." He would have been much nearer the truth had he stated it thus—There is a noisy clique of disappointed failures who are attempting to re-establish their credit by injuring and disparaging those whom they have insulted and dismissed, and by extolling the mines which have honestly and straightforwardly been proved to them to be worthless. Incompetency rests with those who have by their reports and otherwise been the means of inducing the public to believe in the riches of the field. For my own part, I do not possess a sufficient knowledge of the English language, neither do I know how to arrange my ideas, to disparage that which is altogether valueless, and all the effect good reports on this field can ever have will make the crash greater when it does come.

"X. Y. Z." also reminds shareholders that there are other mining captains on the field of quite as much practical experience as myself "who are doing their work not only quietly and well, but hopefully and confidently." Now, I would ask "X. Y. Z." why he has purposely omitted Capt. Bryant, of the Ooregum, out of his list of names; is it because he is not doing his work quietly and well, or is he not hopeful and confident enough to suit the eccentric fancies of "X. Y. Z."? I have not the least doubt but that "X. Y. Z." knows that there are certain individuals to be found who, while they privately hold to one opinion, will publicly advocate another. I do not say that either of the captains named by him would do so. I would, therefore, ask "X. Y. Z." whether he is cognisant of what the private opinions of these captains might be if asked to state them in strict honour? The words "hopefully and confidently" might be interpreted in this manner—that while one might be hopeful of meeting something good while searching all over the claims, yet, at the same time, he felt confident that the results would leave him in *statu quo*. Can "X. Y. Z." state for what reason Capt. Rogers has left the management of the Mysore Company's Mines to come home, seeing that only about one-half of his engagement has expired?

Ladywood, Birmingham, March 13. CHARLES F. BRAY,
Late Manager Great Southern Mysore.

OOREGUM GOLD MINE.

SIR,—Mr. F. Kensington's letter is so worded as to lead its readers to suppose that the present Ooregum Company bought their land from the Colar concessionaires. It was not so. The present Ooregum Company acquired their property from the Ooregum Company of Madras, and until the arrangements for the transfer were finally completed Messrs. Arbuthnot and Co., as trustees for the Ooregum Company of Madras, very properly insisted on their authority being fully recognised, and also subsequently, when appointed local managers for the present Ooregum Company, they were only doing their duty in desiring Mr. F. Kensington to take their orders. Much delay was probably caused by the transfer of the property from one Ooregum Company to the other Ooregum Company; but shareholders will hardly expect the directors of the present company to enter into a paper war with Mr. F. Kensington as to whether or no his conduct was blameable. They have thought fit to dispense with his services, and there can be little doubt that his removal was desirable in the interests of the company, for, whether right or wrong in his views, he seems to have consistently opposed his superiors in Madras. If statements reaching England from many different quarters are to be believed Mr. F. Kensington appears not only to have expressed his adverse views to the directors who would take them for what they were worth, and in doing so he was quite right, but he seems also to have lost no opportunity of openly disparaging everything and everybody connected with the Ooregum Mine except himself and Capt. Bryant. He may not have been intending to do mischief to the interests of the shareholders, but such conduct on the part of a leading official must have affected the zeal of those working under him, and have been most injurious to the energetic prosecution of the works on the mine.

Shortly after Mr. F. Kensington's return to England reports began to circulate respecting the Ooregum crushing which were tantamount to an accusation of gross fraud against the captain and responsible directors of the late Ooregum Company of Madras, by whom that crushing was made, and who telegraphed the result to London. It was incredible *prima facie* that they should have been guilty of the conduct imputed to them; but the directors seem to have acted promptly in the matter, and to have written to India for explanations—the result being that sworn affidavits were sent home and shown to the Editor of the *Mining Journal*, as stated by himself, which prove the utter falsity of the insinuations referred to. But, meanwhile, advantage was taken of the reports to damage the credit of the whole Mysore Colar gold field. Mr. F. Kensington may have had nothing to do with the originating of these false statements; but, considering the detail d circumstantiality with which they were invested, it is difficult to believe that they were not originated by someone connected with the working of the mine. It is quite certain that the propogation of the reports was for some reason hostile to the company, and not scrupulous as to the weapons used to injure it. Shareholders should bear in mind that an influence appears to be at work to injure the entire Mysore Colar gold field quite apart from the criticisms which every new undertaking provokes while on trial, and which are quite legitimate whatever may be their value.

St. Leonards, March 11. A. O. S.

AKANKOO (GOLD COAST) MINING COMPANY.

SIR,—Referring to Mr. Cornish's letter in the Journal of March 4 I trust, as a shareholder who will not be able to be present at the the general meeting, that the charges of mismanagement will be thoroughly investigated, the directors proved responsible removed, and others more competent selected to fill their places. I should like to see Mr. Gething and Mr. Cornish on the board. I am of opinion we have a first-rate engineer and manager in Mr. Lane, and that it is most important, considering Mr. Cornish's experience in gold mining, and his knowledge of the Akankoo property, that his services as consulting engineer be retained by the company. With two such practical men it would be difficult to err. I am an original shareholder, and have since added to my holding, and would advise my brother shareholders not to sell their shares, as I believe with proper management (which we must see that we get) we have the most valuable property on the African Gold Coast. In looking over the prospectus of three West Coast gold mining companies I find Akankoo compares most favourably in extent, situation, cost of purchase, working capital, and annual rental, also the great advantage of having a frontage of 1000 yards on both sides of the Ankobra river, which is navigable, and will save this company a large amount of money in cost of transit of machinery, stores, &c., and work the machinery by water-power at a minimum of cost. The following list will show the comparison referred to above.

Extracted from Prospectuses and Reports of Companies mentioned.

Company.	Capital issued.	Purchase consideration. Cash.	Purchase consideration. Shares.	Working capital.	Annual rental.	Extent, Acres.
Akankoo.....	£100,000	£17,000	£33,000	£50,000	£121 10 0	1100
Guinea Coast ...	100,000	41,667	33,333	25,000	100 0 0	415
Tacquah.....	85,000	27,500	27,500	30,000	200 0 0	300

Patricroft, March 14. AKANKOO.

KOHINOOR COMPANY.

SIR,—From a report from the Donaldson Mine, made up to Feb. 18, it appears that the main shaft had been sunk to a depth of 123 ft., being all the way in ore, and still yielding at the rate of 1½ ton per fathom. The south drift, started from the shaft at 100 ft. depth, has been driven 50 ft. in ore. No. 1 tunnel was in 140 ft., at which point the lode was pinched in size. No. 2 tunnel was in 158 ft., and still showing good ore, yielding 1½ ton per fathom. Up to Feb. 18 these works of development preparatory to stoping have yielded 95 tons of ore. The mill returns of the first 10 tons marketed were reported in the *Mining Journal* of March 4, and showed a very high average. No other mill returns have yet been received, the bulk of the ore being reserved for treatment at the new reduction works on the point of completion in the locality, where better terms are offered. As large profits are being realised from mines the other side of the valley in which the Donaldson is situated, on ore of similar character, but of very much lower grade, the prospects of the Donaldson must be considered as very satisfactory. It is the opinion of the consulting engineer that the mine will soon be in a position to yield 30 tons of ore a-day, the works of discovery having not only yielded 95 tons of ore, but have laid open a large extent of stoping ground.

E.

GOLD IN BLUESTONE.

SIR,—In the Journal of Saturday I notice a letter from Mr. Readwin, in which he states that he has found gold in the bluestone of the Mona and Parys Mines. This is no new discovery. I sold gold to the value of more than 300*l.* between 1857 and 1864, which was extracted from the Mona Mine bluestone, by the working of my special process for separation of that mineral at Bagillt Upper Works, Flintshire. I exhausted every ton of bluestone that could be selected from the waste heaps, and the manager (Mr. Evans) informed me that he could supply no more, and it would not then answer their purpose to mine for it; I was consequently obliged to suspend working that ore. My attention was first directed to the bluestone by the late Mr. W. Henderson, of Irvine, Ayrshire. I think in 1853 or 1854.

The bluestone was experimentally, but unsuccessfully, worked by myself and friends, in conjunction with Mr. Henderson, at Amlwch, and then later on under my own superintendence at Bagillt on a large practical scale. My own process was perfectly and commercially successful in the separation and reduction of all the metals which are contained in the ore. The gold is there in small quantity, but for gold alone, in my opinion, would cost more to extract than it is worth; but it would be satisfactory to have Mr. Readwin's statement of the practical cost on a commercial basis, not upon mere experiments, which as a rule are quite unreliable either for produce or cost.—*Great Winchester-street, March* 15. F. BENNETT.

THE DELIRIUM OF MINING.

SIR,—If the essential ingredient of common sense were a recognised factor in mining its prosecution and results would be almost wholly on different lines, and productive of relatively different quantities—that is to say, the relation between the outlay and returns would be in a general sense reversed. It is true that no one can accurately forecast the future in an enterprise the essential elements of which are in their nature comparatively obscure. But every realm of Nature is instinct with light and peculiar to and inherent in itself. It may be and frequently is light shining in darkness, but no less light because not descried and recognised by visual orbs unsusceptible of its presence and quality. A little dog with a string around its neck and a blind man at the other end is to the hapless wanderer a guide and a light. In scarcely any phase of mining is the light more obscured or the darkness more dense than that inferable from the above illustration. There is always in the obscurity of mining a ray, a string, a guide susceptible of interpretation, inference and conclusion, adverse or favourable, or it sometimes may be inconclusive and doubtful, but in every case there is light even in the most extremely embarrassing, that much at least which begets a shadow, and shadow implies material substance of what nature and kind soever. The indications of metalliferous minerals appeal alike to the sense and intellect of observers, and it is the province of both these sets of faculties to be exercised therewith, and these again appeal to practical experience and scientific investigation for confirmatory evidence of whatever views and conclusions may be entertained and arrived at; and what is the testimony borne by these standards of appeal, whether regarded as witnesses or arbitrators? Is is not that certain conditions of rock formation and vein constitution are favourable, whilst certain other conditions are unfavourable, to the presence and productiveness—in sufficient quantities—of the metallic ores of commerce to repay their development and extraction? Nature is the herald of her own products, and is no less the indicator of the *locus in quo* of metallic minerals than of the peculiar forms and constitution of vegetable life and growth to the soil from whence they originate and develope. What are the essential conditions of successful, consecutive, and comparatively continuous or permanent mining? Order, which is said to be Heaven's first law, is first here, perpetual and unquestioned, presiding over a system of laws operating on matter, said to be inert, but in its malicules ever mobile and changing with regularity as perfect and results as symetrical as the features of the most delicate organism in either of the other departments of this sublunary sphere. Order implies repose, whilst fecundity of metalliferous products require a well constituted framework of rock and vein formations. Metallic minerals are an elaborated product, primarily from the containing rocks, or rocks contiguous thereto or consecutively in order therewith, by the systematic operations of potent forces, law obeying and administering agents, faithful to the functions they perform and unfailing in the effects they produce. Their empire in this relation is the rock bound and rock chained recesses of nether earth, "wherein men make pathways which no fowl knoweth, and which the vulture's eye hath not seen," nor even the land sharks which prey upon its vitals. It would be rational, therefore, to conclude that the seat or centre of this empire of Nature was where her products should be sought and found, instead of on the border line, the outskirts of its own and the province of another realm and jurisdiction beyond the pale of its mechanism, motions, laws, and objective purposes and performances. All history relative to mining confirms this view and conclusion. The hiddeu breastworks of nature are where the greatest treasures of wealth have been found, are still being found, and in all probability will continue to be until the present laws of Nature are annulled, and another and a different economy emerge or spring into being from its ruins.

The delirium of mining was never more pronounced than in the infatuation which impelled Englishmen to furnish four millions sterling to stereotype their credulity on the abortive gold schemes of India. I have no hesitation in saying that if one half of that amount—nay, if one quarter of it—had been judiciously expended in the procuring and working of virgin and comparatively virgin mines in this State, that in 10 years or even less it would have netted 20 or more millions sterling, and during the following decade probably twice that amount. But a fictitious character has been imported to mining, and sensationalism is the order of the day. Mining appears to be in a large number of instances the magic password for making money directly from the pockets of other individuals instead of from the business itself as a legitimate enterprise.

I have no doubt but that there are many honest and practically experienced mine managers and superintendents who would most unhesitatingly add their confirmatory testimony to the following statement—"that much more money might and would be made by the prosecution of mining legitimately than is now realised from it in dividends added to the profits on the winning side in all market and gambling operations, which latter is merely an exchange of ownership, as what one gains another loses, politically no gain at all, but individually the fortune or misfortune resulting from a barely legalised scramble, wherein each exerts himself to secure all or as much as possible of another's wealth and possessions, the cure of which is not to be expected of the counsellors but of the clients themselves, if it ever is effected. ROBT. KNAPP.

Ellsworth, Nye Co., Nevada, Feb. 20.

REMUNERATIVE IMPETUS TO COAL MINING BY THE PROPOSED BAWTRY AND TRENT RAILWAY AND DOCK.

SIR,—A desirable channel of investment is presented to capitalists by this undertaking, traversing a vast unworked coal field. The distance from the group of collieries at ordinary depth which will come into existence is under 20 miles to the Trent Dock, increased workable depths in immediate proximity, accessible to ocean steamers and sailing vessels, six miles nearer to the sea than the well-known port of Gainsborough, bringing the great Yorkshire output in closer connection with the sea than any existing or projected dock, the great goal, or desideratum, of cheap water transport, so essential to the profitable development of the inland coal industry. The immense beds of coal underlying the Rotherham district, 26 miles distant from the Trent Dock, and the Sheffield district, 31 miles further, the Barnsley and Silkstone seams, near Barnsley, will have an incalculable boon offered to them in cheap transport, as shown in the sequel.

By means of light draught steamers, specially constructed for this trade, with certificates of efficiency and economical working from the very highest British and foreign practical authorities, running in connection with the railway, coal can be delivered from the pit mouth into metropolitan consumers' premises, after payment of a remunerative railway toll, wagon hire, dock and navigation dues and lights, amortisation, insurance and repairs, port charges and pilotage, wages, fuel, engine stores, and all Thames and London and other charges of whatever nature, including 5 per cent. interest and 10 per cent. dividend, with an exuberance of time for overhaul, repairs, tidal and fog delays, and contingencies, at a net saving of upwards of 3s. 6d. a ton on mere transport charged by the Great Northern Railway Company, with attendant expenses from South Yorkshire, and upwards of 3s. a ton on mere Tyne lowest summer freight, 3s. 10½d. per ton, with attendant expenses. Not only will such results be realisable in the London trade, but an equally advantageous outcome be attainable in the supply of Paris with steam coal, forming the exclusive category exported to France for household, &c., requirements, the largest Paris coal firm guaranteeing all sales. A direct coal and goods export to the North Sea, Baltic, and southern ports will be carried on by steam and sailing vessels, importing timber, grain, seed, iron ore, &c., for which the geographical position in question ensures success. As to the wood trade, it can be satisfactorily shown that pit props and mining timber can be delivered to the col-

lieries at much under what is paid elsewhere, and wood goods laid down in Sheffield and other great centres of consumption cheaper than *via* Hull, Grimsby, or Hartlepool.

This undertaking has been brought under the notice of a party for many years an extensive coal exporter, in which speciality he travelled many times over all the ports and inland places of consumption in Northern, Central, and Southern Europe, who is penetrated with the conviction of a great future being in reserve for this undertaking. As the import of coal into London last year was 10,563,948 tons, this undertaking will effect an annual saving in transport charges alone at the proportionate rate of upwards of 2,000,000*l.* to the 4,000,000 denizens of London, augmenting the Corporation revenue, through an increased consumption, as a natural consequence of a reduced cost to the consumer. As to any parliamentary opposition that may be offered to the railway and dock by the Manchester, Sheffield, and Lincolnshire Railway Company, their *cause celebre* with the Denaby Company before the Railway Commissioners and the "Lords," I should opine, is so condemnatory that they had better observe due reticence. With regard to the Great Northern opposition, their line of conduct towards the South Yorkshire coalowners and their incursion into the Midland preserves, combined with their deplorable Sutton Dock affair, is quite enough to impose silence upon them, if they do not wish to have their general coal trade policy brought before the public. They will act wisely to observe prudence is the best part of valour. The Yorkshire coalowners have now within reach a rescue from the long existing state of depression they have been consigned to, and will no doubt find it for their vital interest to support this undertaking. Not presuming to encroach further upon your valuable space, I have suppressed much, having been requested to give evidence before the Lords Committee, which, in the interest of coal mining, I may probably accede to.—*Little Tower-street, March* 14. W. J. THOMPSON.

DYNAMICAL METALLURGY.

SIR,—My hearty thanks for the Editorial attention bestowed on my treatise on Mechanical Ore Concentration. I believe that to those of your readers belonging to the profession of mining engineers and metallurgists it will not be without interest if I state in what your statement with regard to the said treatise is not quite correct. Both Gaetzschmann and Küstel are descriptive but not critical with regard to ore dressing machinery, because both lack the theoretical scientific foundation required to base criticism upon. As a record of what has been done they may be valuable, but as a guide for what should be done they are very deficient. Rittinger's Lehrbuch strove to construct the theoretical foundation and scientific basis for the practice of mechanical ore concentration by the use of higher mathematics, and as the principal achievement of all his scientific labours we have his formula for the maximal velocity of fall for a solid sphere in the medium water.

I succeeded in my own theoretical labours with the use of common algebra alone in substituting Rittinger's partly unnatural formula, being applicable to the medium water and to spherical bodies alone by a natural formula applicable to whatever medium be considered, and to all shapes of solids.

While Rittinger's deductions are based on percussion, mine are exclusively based on displacement. F. M. F. CAZIN, M.E.
New York, Feb. 18.

STEATITE.

SIR,—We should like to inform your readers, through the Journal that there is a demand for steatite in England. It is to be found in various parts of the United Kingdom and Ireland, but is at present untouched, so far as we can learn, O'HARA AND HOAR.
Lime-street, London, March 13.

QUICKSILVER

SIR,—The vote of the United States Senate on March 10 upon the Chinese Immigration Bill was: Ayes, 29; Noes, 15, thus giving initial effect to the accomplishment of a Chinese labour prohibition which has so greatly agitated the Western States of America for years past. Nevada at her last poll speaking decisively in its favour by 17,259 to 183. Should the House of Representatives sanction the measure emmigration of Chinese labourers will be precluded for 20 years, and those already in the States will find so great a pressure upon them from the hoards of Dan Kearney and his lawless associates, the very dregs of a mining fraternity, that they will be compelled either to concede an assimilation to their surroundings, notably in not working for a less wage than their American fellow, or endure a repetition of the mob fury, from the violence of which they suffered so severely some two years back. Fully aware that with the extermination or expulsion of this section of the Pacific Coast will be freed from what is considered an industrial incubus, the lawless orders will be but too willing to give an uncontrolled vent to their prejudices and passions, and this is also to be feared, even should the United States House of Rrepresentatives throw out the Bill, for disappointment will again quicken the smouldering embers of mob resentment, and find an outlet in disturbances with the customary Californian accessories. This Bill is consequently of great moment to the status of the quicksilver market, and for data in confirmation of this one may refer to the commercial records of October, 1879, when in three weeks a run from 6*l.* to 9*l.* was witnessed in the price of this article on vague rumours of the prohibition of Chinese labour in California, and from thence turning to those of January, 1880, in which the price is noted as advancing in a few days from 7*l.* to 7*l.* 15s. on reported labour difficulties in the Californian Mines. Assuredly then when the measure becomes inscribed on the United States Statute Book the market will be of a necessity active and buoyant. The Californian market is of itself assuming a very satisfactory appearance, the February receipts being only 2894, with exports alone 5662 bottles. The London position is also slightly more favourable, the January and February exports being considerably in excess of those for similar periods of the past two years, and second-hand stocks, having supplied the demand mostly, are, therefore, somewhat decreased, no accrument having latterly occurred to same speculation through dear money having been nil. Announcement of the Rhodes Reef crushing, awaited impatiently, but probably will not be made until about April 11. In the meantime somewhat extravagant rumours are in circulation concerning the yield of the South-East Wynaad trial crushings, but having in mind the Indian Gold Mining Company's fiasco, do not place a too great a credence in them, although the opinion of experts is that the quartz greatly resembles in appearance at least that of St. John del Rey. Although disappointed that the time-limit in which I expected the rise in quicksilver was passed without the enhancement of value, I still adhere to the soundness of my conclusions, and confidently believe results will within a "measurable distance" bear out the views expressed in my letters under dates June 21, July 6, 16, Sept. 6, 13, 20, 27, Oct. 11, and Dec. 28, 1881, published when in controversy regarding details with Messrs Bennett Bros.—*Roydon, March* 15. INVESTIGATOR.

LEADHILLS MINING COMPANY.

SIR,—The letter of "R. T. M.," in last week's Journal, regarding Leadhills indictates, by the gurgle in his throat, to what genus he belongs. In tones of outraged feelings he asks the "shareholders, who are not directors, and get neither pay nor dividends," to lower their shares to 30s., in order that he may enter the company and assume the office of managing director—not in busy London, but in the quietede of the mine, where he would promise to keep shares steady at the figure he entered. When lead rose in price, and the mine ever so much improved, he would manage to keep the property from having the appearance of being worth more than the fourth of par value. If this is not a faithful rendering of his letter I leave it for himself to unravel. But, Sir, the mine is about to enter on a new phase—of being worked at a profit, even at the present low price of mineral. The thoroughly healthy condition of the mines is attested to by Capt. A. Waters and Mr. Newbigging, resident agent, while Mr. Walton, an eminent mining engineer, corroborates the statements made by the officials, and goes further, in declaring that for extent and richness the mine is second to none. This is gratifying to those shareholders who had patience and faith in the sett, and in their able engineer. In addition to the extensive and rich courses of ore already discovered, the royalty will be reduced a fourth by the erection of additional machinery, which is to be done at once. Thus far the position is very much improved, with every prospect of progression, to the chagrin of "R. T. M." From the earliest times there has been a class oi persons ready to decry goodness under any form, whether in their neighbours or the public. Even a poor man, being gifted with a rich legacy, has his R. T. M.'s. It is generally held as confirmatory when growling is preceded by reported successes, so it is hoped our friend will give his mind an occasional airing at his coveted prize—Leadhills. A SCOTCH HOLDER.
March 15.

BEDFORD UNITED.

SIR,—There are many shareholders in this mine who will concur in the remarks of "R. S." in last week's Journal. The shares are now at a lower price than they were before operations were even contemplated on what has been described by an eminent mining authority as "the finest-looking lode in the district; one which in depth will equal Wheal Emma of Devon Great Consols." That the captain is trustworthy, efficient, and energetic is unquestionable, but one could wish that he expressed himself more fully and clearly in his weekly reports. For instance, it would not be much more difficult, I take it, to put a money value on a lode than to state its probable produce in tons, and yet how much more intelligible to the shareholders, the majority of whom are altogether unversed in mining lore, would the former be? Moreover, it would appear by the reports that for some time past the Bridge lode has been almost unproductive; and yet this can hardly be when, as I hear, nearly 80 tons of ore will shortly be sampled—a grand result from such a shallow depth, and stoping not yet commenced. I would, therefore, suggest that the captain be requested to communicate more freely and openly with the shareholders, and state his own unbiassed views from time to time in regard to the position and prospects of the mine. R. B.
Dalston, March 15.

BEDFORD UNITED MINE.

SIR,—The important improvement on the Bridge lode at this mine will doubtless equal, if not surpass, anything that has been seen in this district since the palmy days of Devon Great Consols. In the 30 east the lode is nearly 6 ft., a splendid course of yellow copper ore. The lode in this level west and the 20 east is also greatly improved in size and quality. This lode is opening out far better than expected by the most sanguine mining experts of the neighbourhood, and it speaks volumes for the adjoining ground, Old Gunnislake Mine, through which this lode runs. I may say a crosscut is being driven at Old Gunnislake, and they are daily expecting to intersect this same lode there. COPPER ORE.
Tavistock, March 16.

BEDFORD UNITED MINE.

SIR,—Being a large shareholder in this mine, and believing we have a splendid property, I am glad to find others, in common with myself, are getting tired of the present management. For years we have had the promise of better things to come, but this has been generally supplemented with a call. It is quite time the adventurers were alive to their own interest, and turn their valuable property to the best account. DISCONTENTED SHAREHOLDER.

THE CARADON DISTRICT, AND ITS MINES.

SIR,—This district has for a long period been noted for its famous and prolific mines, and there are strong indications of retaining its reputation for a considerable time to come. The managers, agents, and all who are connected with mining in this locality are, with unmitigated perseverance, strenuously endeavouring to make the various mines more profitable and productive. The recent improvement and activity in Cornish mining in general has improved it, and augmented the prospects of mining in this district in particular. Notwithstanding the increase in number of mines in the neighbourhood, there are several tin setts which have not as yet apparently been taken up, but are fully worthy of a vigorous trial. It affords much pleasure and gratification to all who take an interest in the welfare of the principal industry of the district to see the different mines progressing so auspiciously and satisfactorily. Disparaging remarks have been made respecting some of the mines, but it is to be hoped that nothing that has been said disparagingly and sinistrous concerning them will be realised. It appears very evident that the writers of such remarks are unacquainted with the district, and a visit would undoubtedly perfectly convince and satisfy them. A good deal of work has recently been done at South Phœnix, preparatory to the further development of this promising enterprise. A rich lode was intersected in the bottom level during the past week. The stamps and dressing machinery will soon be completed, when every facility will be afforded for returning tin. The various buildings and erections have been completed in a very satisfactory manner, and are of an excellent character. This mine is worked by private gentlemen. The amount of tin raised at Wheal Jenkin, in Marke Valley sett, by the ancient miners at so shallow depths, and the present appearance of the lode in the bottom, and the quantity of tin raised during the past few months should fully satisfy the company in sinking deeper, and in giving the mine a vigorous development. The lode is a champion one, and gives strong indications of large productions at deeper levels.

But very little reference need be made respecting the Phœnix United Mines, which have been very profitable and productive, and the monthly returns of tin indicate very clearly that the mines are in a remunerative and productive position at present; the mines are extensive, and show but very little signs of exhaustion—in fact, it is the general opinion of mining experts of reliability that these mines are only now in their infancy. A considerable amount of preliminary work has been done at West Phœnix Mine. A 70-in. pumping-engine, a 25-in. rotary, and a 14-in. horizontal engine have been erected, a nice office, carpenter's shop, blacksmith's shop, changing-house, a steam-capstan, and other requisite buildings have been erected in an efficient manner. It appears that the executive know perfectly well what they are doing, and are putting their knowledge to the best account, as everything is being done with characteristic forethought, evidenced by the durable and substantial character of the work done in so short a time since the commencement of operations. The shaftmen are now engaged sinking below the 30. The cross-cut in the 30 has been driven through the lode, which is about 12 ft. wide, and produce saving work for the stamps, and presents a good appearance of being richer at a deeper level. The mine is being worked on precisely the same lode as the Phœnix United Mines are worked on.

The geological formation and responses to tests already made at Trewitten tin mining property is such as to hold the promise that with a (comparatively speaking) small outlay a rich return will, in all probability, be realised by the shareholders. The stratification of the sett is all that may be desired, the sett being traversed by all the principal tin lodes in the district. One of the most promising features in this property is the junction which, according to the opinion of good mining authorities, is formed by some of the various lodes which run direct into the sett. The mine has only recently started, and has been most favourably reported on by some of the most eminent mine managers in the neighbourhood. An engine-house and other necessary buildings are in the course of erection. The returns of copper ore at West Caradon are quite as well as can reasonably be expected, considering the time since it restarted. Strenuous efforts are being made by those connected with the mine to bring it into a paying condition. A movement in the right direction is about to be made at South Caradon. The manager of this mine is thoroughly conversant with mining in all its branches, having had considerable experience, and it is the opinion of those who are acquainted with the property that if his suggestions or proposals are carried out the mine will again become one of the most productive and remunerative mines in the locality. This mine made a profit in the working of the last three months. Notwithstanding the decrease in the returns it is said by many that the mine is only in its infancy. It is to be hoped that the company will be fortunate enough to acquire the grant of the Foredown property, as it will (if fairly worked) undoubtedly prove a valuable acquisition and a remunerative investment. The Foredown sett is traversed by several lodes, and we see no reason why these lodes should not prove quite as good and prolific as the other lodes have been. Judging from the appearance of the above-named mines, there are every prospect of the district retaining its famousness for many years. S. T. V.
March 13.

THE GREAT WHEAL VOR DISTRICT.

SIR,—We are waiting here with considerable anxiety to see the sampling of the first lot of tin from Great East Vor, which is now being prepared for market. Large anticipations are being entertained with respect to this sampling; but as the time is now close at hand when positive facts and figures will be before us, I forbear to repeat in exact terms the sanguine expectations which are generally expressed. Still, I am bound to say that the works at the stamps give many extraordinary indications to favour these expectations; and as the stamping has been seen by the principal miners of the county, and as they all concur in one favourable opinion, it can hardly be said that these expectations are without solid foundation. What strikes them all is the quality of the tin from the workings which are close to the surface; it is both rich and hard, and the stuff yields a very large proportion of metal. Any experienced man can see from the vanning that the samples are all unusually rich. There are many other works in the neighbourhood which are of great public interest, and if I have not hitherto alluded to them in detail it is only because they are still in the earliest stages of development. But from these particular mines also we are expecting great things. At last the time of the Great Wheal Vor has come; the whole district is in agitation, and in expectation of a thorough revival of its historic fame and prosperity.—*Helston, March* 16. HUEL.

GREAT WHEAL VOR DISTRICT

SIR,—It is with great pleasure that I read in the Journal of the successful mining operations that are being made in the above district. For many years this celebrated old tin mining district has been under a cloud, and the local mining talent seemed to have accompanied it. But the day is again dawning, and let us hope that the old district will fully sustain the high reputation that it has hitherto possessed. At all events, it has made a good start. I visited New Great Wheal Vor and Great East Vor a week back, and satisfied myself that what I had read and heard concerning those two mines to be correct. New Great Wheal Vor, I might mention, is situated a little north of Great Wheal Vor, and adjoining that property. The lode there is 5 ft. wide, and very rich for tin at the shallow depth of 12 fms. from surface. They have hundreds of tons there waiting for the stamping mill. The agent had a sample taken from a parcel of work they were then drawing to surface and vanned. The result was surprising. I judged it to be from 45 to 50 per cent. tin. Great East Vor lies east of Great Wheal Vor, and it embraces every lode that the old mine contained. Here they are working on Wheal Vor main lode, which is 2 ft. 6 in. wide at the depth of 4 fms. below the surface. The work is exceedingly rich for tin, and yielding quantities equal to all expectations. The tinstuff is carried and dressed at Roseladden stamps. West Vor and Leeds United, which lies to the west of Great Wheal Vor, is being vigorously pushed forward. They are driving on a good lode, producing rich copper, and also good work for tin. I am certain that our London friends must feel proud of the splendid mineral properties they appear to have.
Redruth, March 13. PRO BONO PUBLICO.

VAN CONSOLS AND GLYN.

SIR,—On perusing last week's Journal I find Messrs. Watson Brothers have been asked what distance these mines are from the Van, and whether both are on the same lode. I, therefore, beg to inform these gentlemen that Van Consols and Glyn are about half a mile from the celebrated Van Mine, and that there is no question about the lode traversing both properties being the same. Bearing, dip, width, and character correspond. A glance from one property to the other would satisfy the most sceptical of the accuracy of this statement. The lode varies from 30 to 100 ft. in width and upwards. There is no other lode discovered in the county of Montgomery of the same magnitude and component parts. In these mines many strong and valuable discoveries of lead have been made, and several thousands of tons sent to market therefrom. Latterly we have directed our developments to the south part of the lode, which is more than 100 ft. from the north wall, and where we have discovered a fine lode of ore at the 50. We are now cross-cutting at the 60 and 70 to intersect the same, where we all look forward to great success; all indications are greatly in favour of it. I may here add Van Consols and Glyn are still some 60 fms. shallower than the Van Mine, therefore good results may be expected at greater as well as at the present depth.
March 14. JAMES ROACH.

GUNNISLAKE (CLITTERS) MINE.

SIR,—After looking over the advertisements in the Journal for upwards of a month, to see if the instructions of the committee to their engineer to prepare specifications, and to advertise for tenders for the erection of an engine-house in which to place the very cheap engine bought of Messrs Pearce and Co., I fail to find any notice being taken of the matter. Surely the delay of a month or more time, now the weather is so fine, must be a great neglect and hindrance to the accomplishment of the promises of the great things given by the committee—the getting of water up from the River Tamar, the dressing of ores, the working of the present engine, and so avoiding the injurious water now being used; the boring machine to develope Crease's lode, &c. As a shareholder I call upon the committee to let myself and brother adventurers know the cause of the loss of time.
Tavistock, March 15. CHARLES EDISTON.

ANOMALIES IN MINING PRICES.

SIR—As a shareholder in various mining ventures I am frequently struck by the great and apparently unreasonable differences which exist in the prices in mines very recently brought before the public. Take as an instance Indian gold mines, a list of prices in which I submit. Why now should Glenrock be quoted at a premium and Phœnix at a discount? Or why, indeed, should any of these mines be quoted at a premium at all, considering that about two years have elapsed since the companies were floated and, with the exception of a few ounces of gold taken by way of experiment from obviously misleading quartz, no weekly return of ores crushed or percentage obtained has been given? Now a genuinely tried mine, giving about 1400 ounces of gold per month, with an average of 1½ ounces to the ton—the Potosi, is at a considerable discount, and this notwithstanding the fact that the services of one of the most, if not absolutely the most practical engineers of the day has been obtained. Can any of your readers elucidate the mystery? BONDHOLDER.
Chiswick, March 16.

THE USE OF COPPER RAMMERS IN MINES.—Mr. Rowbottom, Coroner for Wigan, held an inquest on Wednesday on the body of Thomas Dempsey, a metal man, employed at the Meadows Colliery, Wigan, belonging to Messrs. Lamb and Moore. The deceased was blowing some rock down in the mine, and whilst he was ramming a shot an explosion took place, killing Dempsey and seriously injuring his mate, Boyle. From the evidence it appeared that the deceased was using a copper rammer, having discarded a wooden one owing to the hardness of the rock and the drill hole being smaller. Mr. Hall, Inspector of Mines for the district, stated that the law did not forbid the use of a copper rammer, the Act only prohibiting iron and steel rammers. Mr. Ralph Betley, Public Analyst, Wigan, said the rammer used by the deceased contained 89·5 per cent. of copper, 8·2 of zinc, and 2·3 of antimony. The metal itself was somewhat harder than copper, but there was very little in its constitution which would lead to the belief that it would give results in working very much different from those given by a pure copper rammer. He had tested the rammer at a rapidly revolving grindstone, and there was no difficulty in procuring sparks. A piece of copper rod held against

the same grindstone produced sparks with almost, if not quite, as little difficulty. It would appear from these experiments that it was readily possible to produce sparks by the friction of particles of sandstone against the rammer, as also against a copper bar, and that it was, therefore, probable thatsparks might be produced by the friction of the rammer against similar material in the shot hole.—In reply to Mr. Hall witness said the rammer used was not anything approaching an iron or a steel rammer.—In his summing up the Coroner said doubtless Mr. Hall would make a report to the Home Secretary on the matter, and the question would probably be raised whether copper rammers should be allowed to be used in stemming. The law enacted that neither steel nor iron prickers should be employed, but nothing was said with regard to copper. The general impression in the past was that copper would not give off sparks, but now that impression had proved a fallacy, for Mr Betley had told them that such rammers were not safe.—The jury returned a verdict of "Aceidental death."

EXTRACTING METALS AND ALLOYS BY THE WET WAY

The processes ordinarily employed to extract metals from their ores involve long and difficult operations when it is required to obtain them in a high degree of purity, but it is claimed that, according to the invention of Messrs. GUETAT and CHAVANNE, of Paris, both metals and alloys may be obtained approximately pure in a more simple manner. Insoluble salts, which by their reduction furnish metallic alloys, are obtained in definite proportions by double decomposition in the wet process. Chromium iron applicable for the introduction of determined quantities of chromium into iron or steel may, for example, be thus obtained. A neutral double chromate of potash and lime, or of soda and lime, is mixed in equivalent proportions with a chloride of iron, and there results by double decomposition insoluble chromate of iron and soluble chloride of potassium and calcium, or of sodium and calcium. The soluble salts are removed by washing. The chromate may be conveniently reduced by being dried and roasted, and then mixed with a sufficient quantity of charcoal powder to effect the reduction, the whole being bound together with agglutinative or fatty matter, and placed in plumbago crucibles, which are carefully luted. These crucibles are afterwards put in a furnace, where they are heated gradually from a dull red to white heat, the temperature sufficient to reduce and melt the metals. It is important that the chromate serving to obtain chromate of iron should always be a neutral chromate, otherwise an acid chromate of iron, which is soluble, will be formed.

Similarly, tungsten iron for a corresponding purpose may be thus obtained. A soluble tungstate of potash, soda, or ammonia is mixed in equivalent proportions with a chloride or a sulphide of iron, and there is obtained by double decomposition insoluble tungstate of iron and soluble chloride of potassium, sodium, or ammonia, or sulphate of potassium, soda, or ammonia. The insoluble tungstate may be washed, dried, and roasted, and finally reduced by the method above indicated for the chromate.

And, again, phosphide of copper for introducing phosphorus into copper and its alloys may be thus prepared. A bichloride of copper is mixed in equivalent proportions with artificial or natural phosphate of lime, and there is obtained by double decomposition insoluble phosphate of copper and chloride of calcium, which latter is separated by washing, and reduced by any convenient method. There should be added to the phosphate employed a quantity of lime sufficient, and even more than sufficient, to ensure it being in the tribasic state of the form $PO^{5}3\,CaO$.

REPORT FROM CORNWALL.

March 16.—There is still no material change to notice in the condition of affairs, and both metal and share markets—in the latter of which, however, there is comparatively little doing—may be described as steady. At any moment a condition of activity may supervene, and it is well, therefore, to be wary. From present indications it seems not unlikely that in several individual mines three will be ere long a rapid and substantial advance. An illustration of the uncertainty of what used to be regarded as the rule of the market—the "official" standards—has again been afforded in the fact that some of the Cornish smelters last week reduced their prices 2s., whilst others remained where they were. The latter was the case with the Penpol Company. Ore taken to one of the other smelters, who offered the reduction, was carried to the Penpol Works, where the full figure was at once paid.

Cornwall has sustained a very heavy loss in the death of Lord Robartes, of Lanhydrock, who was popularly reported to be the largest landowner in the county, and who was certainly one of its largest and most liberal mineral lords. A better friend to mining and to miners Cornwall never had, and while his loss is lamented in every corner of the county, and by all classes of the community, none have more cause to regret his decease than those connected with the mining interest. It is quite idle to attempt to specify all the localities in which he was personally interested, as owner of the *corpus*, in mining enterprise, but among the mines of which he was lord may be named Tincroft, Wheal Agar, West Tolgus, North Pool, South Crofty, and Pedn-an-drea. He was always ready to throw in his lot with the adventurers when need was, and reduce dues to a minimum. Tincroft was largely indebted to him in this direction. To rescue it from the financial difficulties which threatened to swamp it ere Capt. Teague introduced a more satisfactory regime, he gave up at once 1000*l.* owing to him, and lowered the dues to a twenty-sixth, not putting them up again either when times changed and large profits were being realised. So, too, he gave most liberal help to the erection of a man-engine in that mine. West Tolgus was another concern that enjoyed the benefit of a large remission of debt, and of the reduction of dues to one-half during pleasure. Indeed, he never was connected with a mine in regard to which his liberality was not shown, and the memory of much of his generosity has passed away with the "bals" towards which it was exercised. In the working miners and their welfare he was deeply interested. He was for years the mainstay of popular education at Redruth, and provided and maintained the east-end schools in that town, since handed over to the School Board. To him West Cornwall and Redruth were solely indebted for the Miners' Hopital, with its accident and convalescent wards. This institution never cost his lordship less than 700*l.* or 800*l.* a-year, and first and last must have drawn upon his pocket to the extent of some 20,000*l.* Hundreds, we might almost say thousands, of working miners of all ages have been benefited by this establishment. When the mining depression was at its height Lord Robartes was not content with giving money, he found labour, and large breadths of waste land on his estate were then broken up. There was indeed no form of activity or philanthropy in which the interests of Cornwall and the Cornish folk were concerned which he did not aid most heartily, and but a small proportion of his good deeds ever came under the public eye.

For twenty-one years a member of Parliament for the eastern division of the county, until his elevation to the peerage (Lord Robartes) was always a diligent promoter of all legislation that concerned the true welfare of the county. Western mining never had two stauncher and better informed representatives than him and Mr. Richard Davey, and they fought out many a question of material interial interests side by side. An ardent promoter of railway development, Lord Robartes was largely interested in the Cornwall Railway, and had just been re-elected one of its directors. He was untiring in his efforts to give Bodmin a railway, and but for his aid that project would not now be in the promising condition in which it is. On all hands his death creates a gap which no one is competent to fill, though we may be sure the successor to his title will worthily tread in his father's footsteps.

Cornwall has lost, also, one of her best known and most widely respected mine agents, Capt. Maynard, of East Pool, an excellent type of the thoroughly practical miner, always ready to welcome true progress, whether in mechanical operations or in theoretic science, and to advance with the times. It was under his management that East Pool won its reputation and became what it now is, the second mine in all Cornwall, and hardly giving place even to Dolcoath. Indeed, the selling price of both differs only by what on the sum total is a mere fraction; and East Pool is now making the largest proportionate return of profit in the whole county.

There is no need that we should comment at any length upon the misfortunes of Wheal Agar. We prefer rather to express a hope that they are all in the past, and that Captain Trevena will be able without delay to show what the mine is capable of. With the finances put straight by an adequate call, and everything balanced up, there ought to be no more difficulty in developing the resources of what ought to be one of our leading dividend mines. The adventurers have waited long enough for their turn of luck, and—bar accident—the tide ought fairly to turn within the present year. It is, indeed, quite on the cards that the next account may show a balance on the right side of the sheet; but Captan Trevena must not be expected to do wonders all at once. He must have time and free play.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

March 16.—Raw materials for use in the blast-furnace are this week only slow of sale. But in two or three weeks time vendors hope to be booking their usual quarterly contracts, which will of course make them busy. Cokes of South Yorkshire production (of which large quantities are consumed in this district) are 16s. to 16s. 6d. per ton, delivered at the furnaces. Durham cokes are 21s., delivered. Staffordshire ironstones vary from 11s. 6d. to 16s. per ton. Hematite ores—say Saltney descriptions—are 20s. per ton at the mines, to which must be added 5s. 4d. per ton as the carriage rates for delivery in this district. Furnace coal varies from 8s. 6d. to 10s. per ton, the last figure being that of the Earl of Dudley, by which colliers' wages are at present regulated. Forge coal is 6s. 6d. to 8s., according to quality. Pig-iron is this week slightly stronger, because of the better markets in the North, but prices are not quotably advanced. Hematites are 72s. 6d., but sales cannot be made at the price. Thorncliffe (South Yorkshire) pigs are 62s. 6d. to 60s. Staffordshire cinder pigs are 40s. to 42s. 6d., with occasionally makers asking 45s. Messrs. Ward Brothers have almost completed their preparations for blowing in one of their two blast-furnaces which have been idle for several years. Finished iron is quiet, but United States enquiries for hoops are more numerous. For such contracts makers hereabout ask 7*l.* 5s. Common bars are 6*l.* 15s., and a little less. Marked bars are 7*l.* 10s.

The ironworkers' wages question in South Staffordshire is to come into thorough consideration shortly. A representative conference at Wednesbury on Monday decided that mass meetings should be held throughout the whole district, at which attention should be given solely to this question. The series will be commenced at Walsall on Monday next.

A conference of miners and miners' delegates from North and South Staffordshire, Shropshire, and East Worcestershire was held at Wolverhampton on Tuesday, in connection with the Midland Counties Federation of Miners, which has now been in existence a year, and has proved of much benefit to the men. Several important subjects were discussed, among them unskilled labour in fiery mines. As to this the conference were strongly impressed with the danger to life and property involved, and recommended all the miners in the various districts represented not to work in a gaseous mine with men who had not served an apprenticeship, or passed a thorough examination in the work. The employers could surely not object to such tests being enforced, for the difference between skilled and unskilled labour meant a saving of a good 20 per cent. in coal.

The Chatterley Coal and Iron Company (North Staffordshire) will in April next have to meet claims against them amounting to between 3000*l.* and 4000*l.* preferred under the Employers' Liability Act by the relatives and friends of the 19 men killed at the gas explosion at the Whitfield Colliery in February, 1881.

TRADE OF THE TYNE AND WEAR

March 15.—A considerable improvement has taken place at the steam coal collieries during the past week, many of them having been fairly employed. Foreign orders for steam coal are coming in for the Mediterranean and also for France and the lower Baltic. It is expected that as the season advances the trade will again get into a healthy state The house coal trade continues very dull, the mild winter has of course operated very unfavourably on this trade. The London market continues very low. The shipments of gas coal at Tyne Dock and other places continue on the usual scale, and most of the Durham collieries continue to be well employed. It appears to be curious that the coasting trade at Sunderland, both for steamers and sailing vessels, is very dull at present. The main reason appears to be the constant flow of business of all kinds to the Tyne, the great improvements effected in that river of late years, the increased depth of water given, and all other facilities for the shipment of goods, has had the effect of bringing a constantly increased number of vessels of large size to the river, and consequently coal, iron, and all other goods required have to be taken to those ships. The gas coal trade has been disturbed lately to some extent owing to the negociations which have been going on respecting the renewal of the Durham miners' sliding scale, and it was hoped that the outcome of Saturday's meeting between the miners and owners would have been to place the trade in a firm and steady position. So far the hope has not been realised, but there is still a feeling that the meeting referred to will be attended with good results. That the demands of the Federation Board for a readjustment of the sliding scale, or in lieu of that an allowance of 20 per cent. on the men's wages would be conceded, could not reasonably be expected, but the suggestion made by the masters, and the offer to submit the whole question to arbitration, is held to be fair, and the men have nothing to fear and every reason for hope for favourable results to them from the adoption of such a course. It is highly probable that the award of the arbitrators would pave the way for a readjustment of prices. It is hoped, therefore, that the Federation Board will give a favourably reply to the decision of the masters on Saturday, or at any rate make some suggestion or proposal that may lead to a speedy settlement of this important local question. Work has been again resumed at the Trimdon Grange Colliery, the scene of the late explosion. A Government enquiry will shortly be held into the cause of the explosion, and the adjourned coroner's inquest will be again opened on March 29.

The Board of Trade Returns for the past two months show that exports continue to increase; the exports of coal, coke, and cinders for February, 1881, were 510,330 tons, and for the same month in 1882 they amounted to 629,458 tons—a very substantial increase. The trade returns of local ports show a great improvement during the past month of coal also. Newcastle increased its shipments home and foreign, by 38,000 tons, the Hartlepools by 8000 tons, and Seaham by 22,000 tons. In values of goods other than coal and coke there are slight increases on the Tyne and Wear. Middlesborough has large additions of 76,848*l.*, and the Hartlepools 10,066*l.* The general export trade of the district last month shows in the aggregate a large increase in bulk and value.

The pig-iron trade has improved to some extent this week, but some fluctuations have occurred. The ironmasters, however, have wisely determined not to sell below 42s. 6d. No. 3; and this course is warranted by the fact that stocks are decreasing, and the demand both for shipment and inland consumption is also improving. The report of Bolckow and Vaughan showing a profit of 205,806*l.* for last year, and giving a dividend of 8¼ per cent., besides carrying a considerable sum to reserve, is considered satisfactory. The new steel process—the Thomas-Gilchrist—is favourably reported upon, and a third large converter is to be laid down for working it. The company are now producing 4500 tons of steel per week. Manufacturers are hardly able in all cases to get full prices lately quoted for finished iron. Ship-plates are 7*l.* to 7*l.* 5s. Messrs. Connall's stock of warrants is 171,146 tons—a derease of 230 tons. The acceptance of the position of arbitrator by Mr. J. W. Pease, M.P., is a matter for congratulation to the trade. At Middlesborough, on Tuesday, there was a large attendance, and the tone was animated; a rise of 1s. per ton took place in pig-iron. No. 3 pig-iron is, therefore, now 43s. 6d. Stocks are decreasing; the heavy shipments cause iron to be withdrawn from the warrant stores, and Messrs. Connall's stores are now 169,556 tons, a reduction of 1610 tons since last Tuesday. The shipments of pig-iron have been well maintained during the past month, and deliveries inland have also been good. There is no change of consequence in the rates of finished iron.

With regard to the proposed central Northumberland railways there are two schemes at present before the public, one by the North-Eastern Railway Company, who propose to construct a line from Alnwick to Cornhill, and a private company composed of eminent landowners and occupiers, who propose to construct a line from Newcastle to the Wansbeck branch of the North-Eastern System. The bills for those companys came up for consideration on Monday before a Committee of the House of Commons. Neither of these projects appear to be adequate for the purpose, the North-Eastern scheme will no doubt effect a considerable amount of good so far as it goes, but it is really only a branch line that is planned, and the other projectis not really a central Northumberland railway. Such a railway to be worthy of the name ought to extend from the North-Eastern System about Wylam, 10 miles west of Newcastle, by way of Wooler, &c., to the Tweed; it would thus open out a large country filled with excellent products—lime, coal, &c.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

OUR CORRESPONDENT'S INTERVIEW WITH MRS. BUSHELL'S GHOST.

The Mr. Bushell who figures so largely in circular mining literature was in truth a mighty man of mining in Cardigan. He has also the reputation locally of having been a sort of Bluebeard, and one of his wives is even now said to be seen wandering through the ancient woods that are to be found in the northern part of the county, and amidst many of the mines her husband worked headless, but trundling her head before her on the ground.

It fell to my lot once upon a time to pass a night in one of the houses once occupied by Mr. Bushell. It was a lonely place, and it was a wild winter's night. The wind came sweeping unchecked from the South Pole up the Atlantic, beating the waves high up on the coast, and moaning and soughing up the long lonely valleys. I had gone to bed in a cosy room, whose comfort contrasted strongly with the wildness of the night outside. There was a dim glow of light from the dying fire. My head was full of mining matters, which gradually became somewhat dim, like the firelight, and rather confused also, when a reviving flame from the fire revealed to me, sitting upon a sofa by the side of a table near the foot of the bed, a lady headless, but holding her head upon her two hands, which she rested upon the table. Singularly enough I did not feel the least tremor, and after a moment's pause I said, "May I ask you to put your head in its right place?" "With pleasure" the lips replied, and immediately she, with some delicacy of handling, placed her head where it should be. I am not good at describing features; but I may say generally that the face was of the more refined Welsh type—thin lips, well-shaped mouth, good nose, and brown eyes, lighted up with all the life and vivacity of the race, and, saving the red line around the neck, the picture was a pleasant one to look upon. We looked at each other for a little time, and then I broke silence by saying—"May I ask, madam, who it is I have the pleasure of speaking to, and to what I have the honour of this interview?" "I am," she said, speaking with a sweet voice in good English, just touched with a Welsh accent, "the wife of Mr. Bushell. In my husband's time, partly through my having been born of an old British mining stock, and partly from the strength of my love for him, I took a great interest in his mining pursuits, and ever since in my wanderings here I have been the 'Spirit of Mining. You are the North Wales Correspondent of the *Mining Journal*, and I am assured from the benevolence of your face as well of your criticisms you will listen kindly to what I say." "You flatter me, madam," I replied; "but who could help looking benevolent with such a vision of fairness, saddened as it is by the thought of suffering before them, as the one before me now. Was Mr. Bushell really unkind to you?" "The kindest husband in the world; but once, when disappointed and irritated with want of success, which he knew and felt at times, having no director or engineer or manager to make a victim of, he, alas! made one of me. But I forgave him," she added, "and I became as far as I could his guardian angel ever afterwards, as I would like to be the trusted adviser of those who now risk fortune and life and reputation in mines." "How kind of you—I will ask you henceforth to be mine," I said, making a fruitless effort to take her hand. "Do not touch me," she said sadly, "but talk to me as you will." "Had Mr. Bushell many mines'? I asked. "A good many altogether. Not all worked by himself, only the principal of them; but he bought the ore ready dressed by hand from almost numberless little ventures worked by miners round about. These men had little or no expense. When they found a string or bunch of ore they followed it, dressed the ore, and brought it to my husband for sale." "And did they earn much in this way?" I asked. "Rather more than common workmen, and there was an independence about the work they liked, and then the royalties, rents, wayleaves, poor rates, school board rates, Government taxes, and the like were almost unknown." "Happy times; you open up a wide field for consideration," I said, "and it occurs to me that many of our mines would be better worked in this way now." "They would, and certainly many of the strings and leads of ore in the hills around us, and seen in the openings left by the old workers, would pay if worked in this way; or if you must have the improvements of modern machinery have a central dressing-floor, to which a number of little mines surrounding it could bring their selected ore to dress. At any rate, they will not pay all the charges for purchase-money, prospectuses, circulars, dinners, champagne, and the like with which in these days they are burdened." "There is great wisdom in your remarks," I said in reply; "and, talking of circulars, do you ever see any of them?" "Bushels," she said as we both laughed at the allusion to her name. "Your husband figures largely in them," I added. "Yes, and Sir Hugh Myddleton," she replied; "but then this is financing of a questionable kind, not the true mining you and I love." I bowed my acknowledgment, and made a reference to the amenities of mining literature with which we had recently been made familiar. "Poor Esgair-hir and Esgair-fraith" she responded; "to think you should ever come to this." "What do you think of recent changes," I asked. "Avoiding Scylla they have rushed into Charydbis." "An observation," I added, "that reflects equal credit upon your classical and mining knowledge. And about the smelting?" "Jumping out of the frying-pan into the fire." "But Mr. Bushell smelted at the 'furnace?" "Yes; but there he smelted the dressed ores brought over the mountains on ponies and mules and on the backs of men from the various mines, and got what silver he could out of them. Then he had plenty of fuel in the forests that covered the country, helped out now and then by a cargo of sea coal from Glamorgan or Flint, which the ships that came for the ore into the Dovey brought. In the case we refer to the ores are not of the same kind value. The carriage of material will be great, and the result doubtful." "We are getting into very serious talk," I interposed, and asked playfully—"Now, is it true that you walk through the woods trundling your head before you, as the miners say?" "Does my face look like it?" she archly asked, and added—"It is only on the night after a heavy pay that they see so dreadful a sight." "Have you ever appeared to others of our mining friends—Absalom, for example, and Herbert?" "Dear old Absalom" she replied; "I have put many good things in his way, and I anxious to befriend Herbert if I could only see him alone, and he would listen to what I say." "I will tell him," I said, adding—"He seems to have a good thing here in the midst of your haunts." "Yes, if he will only follow it up." "You remember the regiment of horse Mr. Bushell raised for King Charles," I asked. "Oh, yes," she replied; "I think I see them now as they rode past Talybont, a lot of rough wild Welshmen, led by Captain Charles and Captain Tom, with little David Arthur and Evan Morgan, looking as excited as if they were on the scent of a lode." "Dear me," I said; "how like the names were then to what they are now. I should be almost afraid of putting them in print for fear they should be thought to belong to men I know now." "O, don't be afraid," she said; "they need not be ashamed of the comparison. But time flies, and our interview must close. I will see you again." "Do," I said, "soon; and, if you can, bring Mr. Bushell with you." "Would that I could," she said; "I have not seen him since that fatal night, and yet I know he is look-

ing for me. If you could only bring us together," she said piteously "I will try what I can do," I said; and then the form became fainter and more indistinct, and it finally vanished, leaving me in a sort of dreamy wonder, from which I was as it seemed immediately aroused by a loud knock at the door, and by a voice which said—"Half-past six o'clock, Sir; breakfast at seven."

TRADE IN SOUTH WALES.

March 16.—The total quantites of coal exported at Cardiff in February were 447,566 tons foreign, and 85,276 coastwise; Newport, 102,711 tons foreign and 63,941 tons coastwise; Swansea, 79,326 tons foreign, and 59,014 tons coastwise; Llanelly, 5269 tons foreign, and 9803 coastwise. The amounts exported last week week were:—Cardiff, 101,541 tons; Newport, 20,249 tons; Swansea, 26,004 tons. The trade generally is in a healthy condition, but prices for inferior sorts may be said to be weaker. The following are some of the current quotations:—Steam coal: Nixon's navigation and ocean, 12s. per ton; Powell's Duffryn, 11s.; Dowlais, Cwmammon, Aberdare, and Plymouth, 10s. 6d.; Tondu, 10s.; Llangennich, 9s. 6d.; Rhondda Mountain, 8s. 6d.—Anthracite: Gwauncaegurwen, Maesymarchog, and Evans and Bevan's, 7s. 6d.—Patent fuel: Atlantic, Birchgrove, and Graigola, 10s. Nixon's navigation, which, as seen above, fetches the highest price in the market, is about to be formed into a company, with a capital of 780,000*l.*, the bulk of the shares being taken up by Mr. Nixon, of 117, Westbourne-terrace, London; Mr. Hugh Taylor (the agent of the Duke of Northumberland), of Chipchase Castle, Hexham; and Messrs. William and C. Cory, of East Shefford House, near Hungerford. The Navigation Pit is the deepest in South Wales, being 440 yards below the surface, and the seam is 9 ft. thick. The workings are remarkably dry, and have been compared in that respect to the corridor of a mansion. Mr. Nixon spent, it is reported, over 200,000*l.* in sinking the pit before he came to the coal. He exhausted all his means, when suddenly a sinker announced to him in his wooden shed on the surface, to his infinite relief, that the coal had been struck. It is stated that in some years the pit has yielded 60,000*l.* profit, but of late that sum has been considerably reduced This coal has always been used as a test coal by the Admiralty, in comparing its value for the ships of the Navy with North Country coal. It has stood its ground well, but, probably for political purposes, half of the Admiralty orders now go to the North of England and half to South Wales.

The tin-plate trade is again in the throes of a crisis. Prices have come down from 18s. and 19s. to 15s. 3d. and 15s. 6d. There is a tin-plate "corner" at London and Liverpool, and small masters, it is stated, have been "got out," and the usual result has taken place. Many of the works are now only going four or five days a week, while others talk of closing altogether for a time. The trade is a constantly expanding one, as shown by the returns from 1862 to 1881. In the former years only 1,001,437 cwts. were reported, but in 1870 the amount had risen to 2,001,575 cwts.; in 1877 the quantity was 3,084,520 cwts.; while last year they reached 4,848,930 cwts. Throughout the whole period the United States took the bulk of these goods, last year's return showing that 3,524,880 cwts. were taken by that country. It has been the habit of small makers to put superior brands on inferior goods of late years, and thus imperil the names of South Wales tin-plates. This evil is only equalled by the American custom of putting sand in bales of cotton. This is one of the curses of modern trades, and helps to undermine it more than anything else.

At the Pontypridd Police-court, on Wednesday, before Mr. Gwilym Williams (stipendiary magistrate), William Rogers, engineman, was summoned by Mr. Thomas Griffiths, manager of Cymmer Colliery, for breach of rules. It appears that defendant, who did not put in an appearance, had been employed at the pit on Monday afternoon. There were at the time several hundred men—the usual shift—underground. The winding rope used to draw the coal from the pit got suddenly and helplessly entangled, and operations at the colliery had temporarily to be suspended. Upon making search at the pit top it was found that defendant was asleep. He was woke up, but had no excuse or explanation to offer. Through the complication about 300 tons of coal were lost. Defendant was immediately discharged. The stipendiary fined defendant 40s. and costs.

Mr. S. N. Powell, auctioneer and valuer, disposed of by auction, at the Stepney Arms Hotel, on Tuesday, some very important tin works shares: 24 fully-paid up shares of 50*l.* each were put up; also four 50*l.* shares (40*l.* each of which had been paid up). Mr. Joseph Maybery, manager of the Old Castle Iron and Tin-Plate Works, purchased 12 of the shares at 105*l.* per share; and Mr. Arthur D. Davies, registrar of births and deaths, purchased 12 at 96*l.* per share.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

March 16.—There is nothing new to report with respect to the trade of Derbyshire, which, as far as regards mining, is still quiet. In the lead districts a steady business continues to be done, and the production of ore continues of an average character. There are now very few ironstone mines being worked in Derbyshire, makers depending more than ever on Northamptonshire, from which copious supplies are being drawn by most of the large works. The probability is that it can be imported fully as cheap as it can be raised locally, whilst there is the further advantage that the stone is richer in metallic iron and requires less coal in smelting. At the mills the out-put is steady, but the demand for finished iron cannot be said to be active. Merchant iron has been going off tolerably well, and most of the foundries have been fairly employed. There has been a better inquiry for pipes, and a good business is being done in mining and other machinery. The works at Dronfield have been doing well in the production of steel rails, for which the demand has been good, although orders have to be taken at rather lower rates than ruled some two or three months since. The house coal trade is quiet, but from Clay Cross and other leading collieries a good deal of coal has been sent to London, where the price has fallen considerably of late. Silkestone coal can now be purchased at the pits for 7s. 6d. to 8s. per ton, although the cost to the consumers in London is 22s. per ton. More colliery owners, however, are now becoming merchants, and selling direct to consumers, and should this continue to be the case there is some chance of the coal ring being broken up, and of colliery owners receiving a fair price for their coal, and selling it at a lower price. At the present time it cannot be said that colliery owners are making a profit, so low are they obliged to sell, but the merchants being able to fix the price at which the consumers must pay are able to realise a good profit at all times. Steam coal has been going off well for the time of year, but like other qualities it has to be sold low, not averaging more than 6s. per ton. There has been a fair amount of business done in engine coal for the Lancashire and other manufacturing districts. In gas and other qualities of coal there has been no change.

In Sheffield trade in some branches is not quite so good as it was, and there has been a falling off in the price of raw material—iron and steel. Consumers of ordinary pig have been buying rather sparingly, and without any reference to forward deliveries. Makers of steel have had to submit to a similar state of things; still, the mills and forges have been working well, and a heavy business continues to be done in steel-faced armour-plates, as well as ordinary iron plates for shipbuilders and boiler-makers. Steel rails continue to be extensively produced, but the competition appears to have brought prices down to a point lower than for months past, the rate it is sent out being above 6*l.* per ton. A good deal of Bessemer is being made of special qualities for cutlery and other purposes. Railway material, including tyres, springs, axles, and wagons, are still in steady request. Table and spring knife cutlers have been well employed, and there has been more than usual activity in the manufacture of razors. The season for sheep sheers has commenced in earnest, and orders continue to flow in from Australia, South America, and other countries. Edge tools, saws and files were also in steady demand, and there is increased activity as regards light agricultural and horticultural implements. The engine works are still favourably off for work, and some of the foundries are doing more in palisadings, ranges, pipes, and ordinary castings. The coal trade of South Yorkshire is still comparatively quiet, the fine weather being against the consumption of household qualities. Steam coal, however, has been going off tolerably well for Hull from several collieries, but not so much is being done with Grimsby. Makers of coke are doing a large trade, as they are now able to compete with Durham as to quality, whilst being near to several iron-making districts it costs considerably less.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. CLXLII.*

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ENDLESS ROPE SYSTEM 3°—(a and b).—Two cases can be distinguished under this system, one in which the rope moves continuously in the same direction, and which requires some arrangement for attaching the corves to the rope whilst the latter is in motion; and also a double roadway; on one of which the corves move in one direction and in the opposite direction in the other. In place of a double roadway a slight saving in outlay may be effected by having three lines of rails, with the exception of a pass-by with four lines of rails in the middle.

In the second case the rope moves alternately in both directions, a run of corves being attached alternately at each end. With this arrangement a single roadway may suffice.

The following are the modes of attaching the corves to the rope in the first case, which requires that the corves can be attached and disengaged whilst the rope is in motion. Perhaps the simplest and most effectual is to provide the front end of each corf with a bent fork, the rod of which is inserted in a socket fixed to the front end of the corf. When the rope is inserted between the two prongs of the fork the friction of the rope draws forward the loose end of the fork carrying the prongs, and this tends to place the line joining the two prongs of the fork parallel to the rope, which it cannot do without kinking, and thus gripping the rope, the weight of the corf keeping the fork pressed against the rope. When it is necessary to loosen the corf from the rope the corf is pushed forward in the direction in which the rope is moving, so as to take off the strain on the fork, when the rope can be easily lifted out from between the two prongs of the fork. Another very simple arrangement is to have a pair of gripping tongs fixed by a short chain to the front of the corf, the gripping end of the tongs when closed forming a cylinder parallel to the tong hinge, and having a hole through it somewhat smaller than the rope. A ring is pushed over the upper end of the tong handles to hold them together. Although this last arrangement may be used to attach the corves singly to the rope it is generally fixed to an empty corf at the front end of a run of corves, and in which an attendant rides. When passing round curves the attendant pushes the upper end of the tongs towards the concave side of the curve with his hands, and the chain to the opposite side with his foot, in order to prevent the tongs coming in contact with the rope guide pulleys. In some cases clamps or clips, which are attached by means of short chains to the drawbar of the corf, are used, and tightened on the rope by means of screws. Such arrangements as these last are employed where trains of three or four corves are hung on the rope. The following clip arrangement allows of the clip being loosened at once from the rope, even when the full strain of the corf is on the clip chain. The clip consists of two pieces of flat iron hinged together, which when closed leave a hole somewhat smaller than the rope. One of the pieces is prolonged past the hinge, and terminates in a ring, to which the coupling chain is attached, the opposite end terminating in an eye, about which a bent lever is hinged. The latter has a slot hole, which slips over the curved end of the opposite half of the clip, nipping the clip tight on the rope. The lever may be prolonged out straight, and can then be readily knocked loose.

At the Pelton Colliery, near Newcastle, a special corf is fitted up for the attendant, and which serves to connect the train of corves to the rope. The corf is provided with a seat for the attendant, and has an opening in the bottom. The rope is gripped between a long beam of wood attached to cross bars on the under side of the corf and a wooden wedge, which is attached to a long iron slide bar. The guides through which the ends of the sliding bar pass are placed in such a position that the bar is inclined, and slides forward at a slight angle to the rope, the wooden wedge being thus tightened on the rope. The slide bar has a slot hole, through which the lower shorter end of an hinged lever passes, the lower end terminating in a handle for the attendant. When the train of corves is ready for starting the attendant lifts the rope by means of a rod bent up at the lower end, until the rope is in line with the groove formed in the gripping wedge and block, the hand of the lever is pulled back, moving the wedge forward in the direction in which the rope is travelling. The rope, therefore, tends to keep the wedge pressed tight upon itself. When passing round curves, or over places where the rope passes below the level of the roadway, the rope can be readily disengaged from the corf. The run of corves is expected to be carried round curves and such places by its own momentum.

The endless rope is driven generally from the end nearest the pit bottom. In order, however, that the engine shall drive the rope some arrangement must be adopted by which the drum round which the rope passes can drag the rope with it. The small surface which the rope offers for friction, and the difficulty of keeping it sufficiently tight on the drum, renders it impossible that the rope can be driven (to transmit such a great power as is required, and at such a slow speed as is necessary underground) in an exactly analogous manner to wire rope or belt transmission in a factory. The rope may be driven either solely by friction or by gripping, or by a combination of both. In the case of a rope or band round a pulley the condition which must be fulfilled in order that the pulley shall carry the rope round with it is that "the quotient of the on-coming part of the rope divided by the tension of the off-coming part of the rope shall be less than 2·718 raised to the fa power; where f denotes the co-efficient of friction, and a the circular measure of the angle covered by the rope (see Rankine Machinery and Millwork, p. 351). Where this condition is not fulfilled it may be complied with by increasing either or both the co-efficient, of friction and the angle covered by the rope on the drum, or by increasing the tension of the off-coming part of the rope.

The co-efficient of friction for a tarred wire rope on a cast-iron grooved pulley, where the bottom of the groove is semicircular, with a radius slightly greater than the radius of the rope, is given by Von Hauer as about 1-10th. The coefficient may be increased by covering the pulley with wood or some other substance; but these have the fatal disadvantage that they wear out very rapidly. Although we have no practical means of increasing the coefficient of friction we may practically attain the same end by increasing the normal pressure of the rope against the groove, and this is attained in several ways. The simplest and most general is to make the radius of the curve of the bottom of the groove much less than that of the rope, and to incline the sides at a suitable angle. The less the angle between the two sides so much the greater will be the increase of the normal pressure. The angle may, however, be made too small, and in this case the rope will tend to become wedged between the two sides, and on coming off will require some force to loosen it, and will also come loose with a jerk. To this is to be added the wearing out of the groove which is thus occasioned, and this will take place the more rapidly the less the angle enclosed between the sides of the groove, and when the groove has become worn out the advantage first obtained is lost. In some collieries the groove is formed by means of two wrought-iron annular rims, bolted together so as to form in section a shape somewhat like the letter **V** or **Y**. The wrought-iron springs somewhat, and acts thus partly as a self-acting clip or gripping arrangement. In one or two cases this arrangement has been found to answer so well that it has replaced the clip pulley. When the angle between the two sides is 60 degrees the effect is equivalent to doubling the coefficient of friction.

Fowler's clip pulley consists of a cylindrical pulley, of sonh a breadth that a number of hinged clips can be arranged round the periphery. The pins on which the clips are hinged are placed below the bottom of the groove. When the rope comes between the clips it presses these down, which owing to the position of the pins on which the clips are hinged causes the sides of the groove to approach and grip the rope. The normal pressure with which the clips grip the rope increases with the tension of the rope, and the nearer the centre of the rope approaches the line joining the centre of the two hinges. This arrangment obviates the disadvantage of the rope being wedged in the groove, and allows it to come loose without shock when the rope begins to leave the pulley. A stop beneath the clips prevents these being drawn so far down that the centre of the rope comes in line with the centres about which the clip is hinged. Barraclough's clip pulley contains loose clips, which can slide up and down in a **V** shaped groove, thus bringing the clips closer together when they are pressed by the rope towards the bottom of the groove. The relation between the normal pressure with which the clips grip the rope, and the tension of the rope remains the same whatever may be the position of the clips in the **V** groove, since the angle of the groove keeps the inclination of the clips to each other constant. In the case of Fowler's clip pulley this angle diminishes, and the grip of the clips on the rope increases more rapidly with the tension of the rope. If the tension of the rope in the case of Fowler's pulley is very great the grip of the clips on the rope may become so great (when the angle is very small) that the rope is flattened and the strands injured. Johnson proposes to increase the friction by making the trace of the groove on the periphery as an undulating (sideways) or wavy line. This brings into play the stiffness of the rope, which, however, seems likely to suffer with constantly passing round such a pulley.

The means of increasing the angle covered by the rope on the drum are as follows:—The simplest of these is to place a guide pulley in front of the driving pulley, and to lay the rope round the two pullies, so that the portions of the rope between the two pullies cross each other. When the two pullies are about the same size the rope passes round about three-quarters of the circumference, whilst without such an auxiliary or guide pulley the wire rope covers only one-half the circumference. In this case the planes of the grooves of the two pullies coincide. The rope may be passed one and a half times round the circumference, but this arrangement requires two guide pullies placed at right angles to the driving pulley, and at different heights, so that the one shall guide the on-going parts of the rope and the other the off-coming parts of the rope. This arrangement has the disadvantage that the new windings must push the other forward. To lessen this disadvantage the groove of the pulley has been formed curved in section, the radius of the curve on the side on which the rope runs on to the pulley being much less than that on the opposite side. The rope passes on to the pulley where the inclination of the side of the groove is so great that the tension of the rope as it passes on to the pulley is brought to bear almost entirely on the last coil, and to push it towards the bottom of the groove.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath Dr. VON GRODDECK, Director of the Royal Bergakademie, Clausthal, the Harz, North Germany.

FOREIGN MINING AND METALLURGY.

The intelligence received with respect to the Belgian coal markets is a little more favourable this week; at any rate, as regards the quality of the coal in which business is still done. In saying this we do not refer to domestic coal, for the very good reason that scarcely any business has been passing in it. It is, in fact, quite useless to quote the price of an article of consumption which is not required by anyone. As regards industrial coal, it is still in good demand, but the markets have been burdened with a quantity of undisposed of household coal. Coal for sugar works has been in increased request. In the Couchant de Mons, as well at Mariemont, transactions have been concluded at 10s. 5d. per ton, or upon slightly higher terms than at the corresponding period of last year. In the Liége basin contracts have been concluded only very exceptionally. No definite opinion can be formed at present as to the possibility of establishing an advance upon last year's rates, notwithstanding prices of 10s. and 10s. 6d. for coal similar to that employed by sugar works have been tolerably firmly maintained, and this has induced good hopes for the ensuing season. Coke has remained firm in Belgium, and it is probable that this firmness will continue in presence of the existing state of affairs in Germany. To go into a few further particulars with respect to the German coal trade, we may observe that it presents little change. Domestic qualities of coal are neglected, but the sustained demand for industrial coal materially assists to support the markets. The railways accommodating the basin of the Ruhr carried 69,690 tons of coal daily in the second half of February, as compared with 70,520 tons in the preceding fortnight.

No further advance has been established in the French iron trade, notwithstanding the favourable aspect of the markets, which have been well sustained by the abundance of the demand. It is difficult to carry quotations for merchants' iron beyond 8*l.* 12s. per ton at Paris, although in the Departments the activity of production appears to have been carried to its utmost limits. In the Haute-Marne coke-made iron has brought 8*l.* 12s. per ton, and mixed iron 9*l.* per ton. The deliveries of Longwy pig have been important, having increased in February as compared with January. The production is said to be engaged beforehand until the end of October. Refining pig is maintained at 2*l.* 17s. 6d. to 2*l.* 18s. 4d. per ton, while casting pig has made 3*l.* 5s. 4d. to 3*l.* 7s. per ton. It is now stated that the contracts obtained by the St. Denis Workshops from the Northern of France Railway is for 10,000 trucks instead of 12,000 trucks, as first reported. Even 10,000 trucks must be admitted, however, to make up a very good order. The imports of coal, lignites, and coke into Austria amounted last year to 2,163,174 tons, as compared with 2,241,007 tons in 1880, showing a decrease of 77,833 tons last year. The exports of lignites, coal, and coke from Austria last year attained an aggregate of 3,573,336 tons, as compared with 3,720,519 tons in 1880. It will be seen that the exports declined last year to the extent of 147,183 tons.

The Belgian iron trade has experienced scarcely any change. Refining pig maintains its prices pretty well. The Luxemburg has even slightly advanced its quotations, thanks to the good tone of the German markets. Athus having its production engaged for six months in advance is not much pressed to disposed of the remainder of its output for 1882, and can afford to wait for better days. At Charleroi a stout resistance is offered to any attempt at a reduction in quotations, although some slight sacrifices would probably be made in small transactions in order to retain old clients. The condition of the Belgian forges is very similar to that of the Belgian blast-furnaces; the works being well off for orders show little disposition to allow a downward tendency in prices to make any progress. Plates have been in request in Belgium, although purchasers show some disposition to await the course of events. An adjudication has just taken place at the La Haye for 6000 tons of steel rails and 645 tons of accessories required for the Dutch Government. England, Germany, and Belgium were all represented in the competition. The lowest tender was that of the Angleur Steelworks Company, while the next lowest tender was the Messrs. Bolckow, Vaughan, and Company (Limited). The imports of steel and iron into Austria last year are officially returned at 138,222 tons, as compared with 98,128 tons in 1880, showing an increase last year of 40,094 tons, or nearly 40 per cent. On the other hand, the exports of steel and iron from Austria last year declined to 49,397 tons, as compared with 93,448 tons in 1880, showing a falling off of 44,051 tons last year, or nearly 50 per cent. In the German iron trade prices have shown continued firmness, and have even been tending slightly upwards.

Meetings of Public Companies.

SOUTH INDIAN GOLD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Cannon-street Hotel, on Wednesday, for the purpose of confirming certain special resolutions passed at the extraordinary general meeting held on Feb. 27.—The chair was occupied by Mr. C. J. HARDING.

Mr. SAMUEL JENNINGS (the secretary) read the notice calling the meeting.

The CHAIRMAN said the purpose for which they met was to confirm the resolutions passed at the last meeting, and he would, therefore, move that the following resolution be confirmed:—

"That it is expedient that, pursuant to Sec. 161 of the Companies Act, 1862, this company should be amalgamated with, and its property, business, and assets transferred to the Indian Glenrock Mining Company, Limited (hereinafter called the Glenrock Company)."

Mr. GILLESPIE seconded the motion, which was put and carried.

The CHAIRMAN next moved the confirmation of the following resolution:—"That this company be wound-up voluntarily, and that Sir John Humphreys and Lieut.-Gen. E. Wray, C.B., two of the directors, be and they are hereby appointed liquidators for the purposes of such winding-up."——Mr. GILLESPIE seconded the motion, which was put and carried.

The CHAIRMAN next moved that the following resolution be confirmed:—"That the liquidators be and they are hereby authorised to sell and transfer the property, business, and assets, of this company to the Glenrock Company, in consideration of the latter company agreeing to discharge the debts and liabilities of this company, and the costs of and incidental to the sale, and in consideration of 100,000 fully paid-up shares of 1*l.* each in the Glenrock Company for distribution amongst the shareholders in this company, such shares ranking for dividends subject to a deduction of 28,000*l.*, payable out of the profits to arise from any sales heareafter of any property for the time being belonging to the Glenrock Company, such sum being distributable by way of dividend to the persons who at midnight of Feb. 4, 1882, were the registered holders of the 140,000 original shares of 1*l.* each in the Glenrock Company."——The resolution was seconded and carried unanimously.

On the motion of the CHAIRMAN, seconded by a SHAREHOLDER, the following resolution was also confirmed:—"That the liquidators be and they are hereby authorised to enter into and exercise such agreements and other documents as they may think fit to carry out the purposes aforesaid."

The CHAIRMAN said it would be satisfactory he should tell the shareholders with reference to the quartz which was sent home, and of which samples were assayed by Messrs. Johnson and Matthey, and Messrs. Claudet, that on the 9th inst. a portion of that quartz, weighing 58 lbs. (part of the 3 cwts. sent over), was ground and amalgamated in the Readwin pans at East Greenwich, under the personal supervision of Mr. Darlington, and the result had been to confirm fully all that Messrs. Johnson and Matthey and Mr. Claudet reported. (Hear, hear.) The directors were in expectation of receiving a larger quantity more, probably some 5 tons, which would probably be submitted to another test here when it arrived; so they hoped in about a fortnight to have another portion of quartz tested under the supervision of Mr. Darlington, and he had no doubt the results would be equally satisfactory. In each of the tests the results had been to show upwards of 1 oz. of gold to 1 ton of quartz, and he need hardly say that if such a result was maintained in a large quantity of quartz the success of the company would be very great.——The proceedings then closed.

NEW CALLAO MINE.

A special meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Monday,

Major FORTESCUE, J.P., in the chair.

The CHAIRMAN said the meeting had been called at a very short notice, in consequence of a circular sent out by Messrs. Beall and Co., of Queen Victoria-street, convening a meeting of shareholders for the following day. The meeting was not strictly a legal meeting, because the directors were unable to give the legal notice to the shareholders; but the shareholders had been invited to hear a statement with regard to the present position of the company, and with the view of discovering the attacks which had been made on them, for the purpose of winding-it up and so on. The state of the case was this. Some few days ago a few shareholders, representing between 500 and 600 shares, applied to have their names removed from the register, in consequence of alleged mis-statements in the prospectus. The question was now practically before the Courts, and it would hardly become him either to criticise what these gentleman had done or to say more about it, except merely to lay the facts before the meeting. About a week since he had been very much startled on finding in the papers that a petition had been presented to put the company into bankruptcy, and a day or two afterwards they were served with this petition, and it was to this petition more than to the other that he wished to draw their attention at that moment. Very soon after they went to allotment a Col. Jamieson, whose son had been in Venezuela for some time and was still there, came to him (the Chairman) and said he would very much like to have an independent report on the property made, and suggested that his son should make such a report. There were reasons, however, which induced the directors to believe that just at that time it was not desirable to have any additional report upon the property, until the shafts were open, and their own engineer had had an opportunity of making his report. They, therefore, did not accept the suggestion. Thereupon Col. Jamieson through his solicitors, Messrs. Greenfield and Abbott, commenced an action to have his name removed from the list of shareholders, upon which he stood as the holder of 1000 shares. The solicitors had arranged that Col. Jamieson should not press for the immediate removal of his name, and the directors had undertaken on their part not to press Col. Jamieson for his overdue calls, and they were now prepared to fight the thing out on its merits. There was also a petition in bankruptcy presented by a holder of 85 shares, also through Messrs. Greenfield and Abbott, which contained nearly word for word the clauses in Col. Jamieson's petition. He (the Chairman) was quite willing if the meeting desired it to go through this petition paragraph by paragraph, and to meet it word by word. He could show that not only was it a very great mis-statement of facts, but that the gentlemen who had got up the case had not even taken the ordinary precautions to find what the actual position of the company was. As the question would come before the Court on Saturday he did not know whether it would be well to go into the matter very fully, but there could be no harm in his answering any questions that the shareholders might like to put. With regard to the action brought by Messrs. Beall and Co., that firm had sent out circulars calling a meeting for the following day (Tuesday), and they asserted that they could prove certain statements contained in their claim; but he would defy them to do so. For the most part their statements were absolutely without any foundation, and it would, therefore, be quite impossible to establish them as facts.

A SHAREHOLDER asked whether there would be any harm in reading the petition.——Mr. DAVIS (the solicitor), replied that he did not think it would be quite respectful to the Court to read the petition; but he presumed that any shareholder could obtain a copy of the document. The Chairman could, however, explain the principal facts.

The CHAIRMAN said the petition commenced by stating that the company paid the sum of 30,000*l.* for the property, and was entitled to purchase a further 750 acres for 90,000*l.* The sum stated to have been paid for the property was correct, but though there was an option to acquire further property no terms had yet been mentioned. It then stated that the property was sold to the company as a gold mine in working order; but no such statement appeared in the prospectus, where the object of the company was described as being the acquiring, working, and developing of a "valuable gold mining property." The petition then stated that the company had no grant of the property.

Mr. BEALL: You have not furnished us with the third paragraph. There is a statement that the property is not worth 5*l.* an acre.

The CHAIRMAN: That is a question which can only be proved by actual working. We have ample evidence that it is not the mere barren property that it is described here to be. With regard to the statement that the company had neither a grant nor a concession the solicitor had with him a title-deed registered in the Court of Venezuela, and he believed that so far as the laws of Venezuela could make it, the mine was the absolute property of the company, subject not even to the payment of the small balance of the purchase-money.

Mr. BEALL: Mr Pinnelly's name is not mentioned.——The CHAIRMAN replied that he was simply stating the facts. The petition then stated that no shaft had been sunk by Mr. Pinnelly; but the directors had evidence that the shaft described by Mr. Pinnelly had actually been sunk. It was then stated that in 1881 Mr. Pinnelly entered into negociations with the directors. That was an absolutely false statement. The directors had had nothing to do with the property until it was practically transferred to the company, nor had they any negociations with Mr. Pinnelly. The next paragraph charged the directors with having been the promoters of the company. This was perfectly untrue. The next paragraph described the prospectus as a cleverly-worded document, containing false statements, misrepresentations, and so on; but the directors were perfectly prepared to prove that every statement in the prospectus was true.

Mr. BEALL: The prospectus does not say how far or how near west of El Callao the property is situated.

The CHAIRMAN: I grant you that. It says "west of El Callao," and it certainly is west of El Callao. (Laughter.)

The CHAIRMAN, in reply to a question, said that the property was about 100 miles west of El Callao, but it had always been considered a good point that the property was nearer the base of operations than the other series of mines were. The petition then stated that the prospectus suggested that the mine was taken over in working order. This was also untrue. Had the property been taken in working order it would not have been acquired at the price that it had. Then, with regard to the yield of quarts, the directors had independent evidence that the statements in the prospectus were not exaggerated. Then, as to the statement that the property was in the immediate neighbourhood of the El Callao Gold Mine, such a statement would certainly not be found in the prospectus. Then it was said that the statement in the prospectus that many gold mines in Venezuela had been most successfully developed was untrue; but El Callao was one of the most successful mines in the world, and there are certainly other successful mines in Venezuela. Then the petitioners stated that the property was not subject to a nominal rent of 60*l.* per annum. The title deeds contained a statement to the contrary effect. They were prepared to stand by the statement that the vein had been opened out, and that lodes 5 and 6 ft. in thickness had been discovered, and also that they had a plentiful supply of water for the 40 heads of stamps. Mr. Nicholson, a perfect stranger to the directors, came to the meeting and described the property from a perfectly independent point of view, and in very high terms. Mr. Nicholson had since been appointed manager of the Chile Mine. The position of the river was shown on the map, and there must certainly be an ample su pply of water, and all they wanted was a dam to regulate the supply of water. It was then stated in the petition that 40 heads of stamps could not crush 120 tons of quartz a day, but that statement must be a mistake. As to the company having no option for a further 750 acres, they certainly had this option extending until May 1. It then stated that it was not the fact that 20,000 shares were not properly subscribed for before the prospectus was advertised, but it was an absolute fact that within about a hundred of that number was positively applied for before the issue of the prospectus to the public, and the directors were perfectly prepared to have a list of those shareholders made out. The next statement was that Mr. Richter, the nominee of the vendor, was to receive 3000 shares for his services. It was perfectly true that certain shares at one time stood in the name of Mr. Richter, but they were transferred to the vendor on Aug. 31. It was next stated that the directors—and some of them were named—had an understanding with Mr. Richter, but that was absolutely untrue. He had only seen Mr. Richter once, and had had no communication with him. It went on to say that the directors received from the vendor a large number of shares, and that he (the Chairman) was said to have received 1000 shares, and that other members of his family had also received a large number of the shares between them. This was an utterly unfounded statement. He subscribed originally for 500 shares before the allotment was made, and he afterwards subscribed for 250 more, and put them into the names of his children. He was liable for the balance due on these shares the same as any other shareholder. (Cheers.) Since the company had been in existence he had purchased more shares, and he was now the holder of a larger number of shares than he was stated to have received from the vender. (Cheers.) The other directors were also large shareholders, and he would be glad to show any of the shareholders the applications to show that the petition grossly mis-stated the facts. (Renewed cheers.) About 2300*l.* had been spent, or was now being spent, on the development of the property and preparatory working.

A SHAREHOLDER.—What is the balance at the present moment?——The CHAIRMAN.—Only a small amount; on March 1, 500*l.* was at the bank.

The SECRETARY, in reply to a question, said that about 10,000*l.* had been paid to the vendor and 2500*l.* was still due to him.

The CHAIRMAN added that the statement that the actions had been commenced was perfectly true, and also that one of the companies mentioned in the prospectus—La Concepcion—was being wound up. It was rather a curious fact he was informed that the decision to wind up the company had been arrived at on a depreciatory report by Mr. Nicholson, who had spoken so highly of the New Callao Mine. The other statements in the prospectus could and would be substantiated at the proper time.

Some discussion arose as to whether certain letters written to the directors, in which some strong expressions were used with regard to the proceedings of Messrs. Beall and Co. in connection with this and other companies should be read; but eventually it was decided that the letters should not be read, but that any shareholder could have the opportunity of reading them privately.

Mr. SNELL asked what were the prospects of the shareholders in the event of winding up? Would they get a penny after the expenses of the liquidators were paid? What actions were now pending against the company for the removal of names from the register of shareholders? Whether the directors were of opinion that the company had sufficient capital at its disposal to work the property; and whether there was any fair prospect of a remunerative return from the operations of the company?——The CHAIRMAN, in reply, said he believed it was a rule that in forced liquidations shareholders got very little return. The company had ample funds available to carry out the operations mentioned in the prospectus, and he believed that it would be unnecessary to call up more than 18s. in the 1*l.*, at all events until they commenced to make returns. The directors believed that the company had a very good future before it, and that good results would be arrived at at no distant date. With regard to the actions, about 500 shares were represented by the Messrs. Beall, Colonel Jamieson held 1000 shares, and the other petitioners 85 shares. (Laughter.)

The SOLICITOR remarked that out of the 500 shares represented by Mr. Beall 400 were taken by a gentleman who called on the Chairman six weeks ago, and obtained permission to delay paying his calls on the ground of poverty. The next the directors heard of this gentleman was that he had joined in this action. (Laughter.)

Mr. BEALL said this client of his had lost 15,000*l.* in two years in similar companies. ("Question.")

Mr. RAMSEY COOKE, R.N., spoke in high terms of the prospects of the property, and the ability and integrity of Mr. J. A. Skertchley, the company's present manager. He also went through the petition presented by Messrs. Beall and Co., severely criticising some of the statements in that document. He moved a resolution to the effect that the shareholders having heard the statement of the directors express their unabated confidence in the company, and authorised the solicitor of the company to oppose the petition presented by Mr. Brett and Messrs. Beall and Co. as quite unwarranted. The resolution also asked that those shareholders who might have given authority to Messrs. Beall should at once withdraw it in the general interests of the company.

Mr. LIEBMANN seconded the motion.

Mr. BEALL, in the course of some further conversation, asked a long series of questions, but the solicitor of the company advised that it would be injudicious to answer them, considering that Mr. Beall had commenced an action against the company.

The CHAIRMAN asked Mr. Beall whether he intended to support or oppose the petition for liquidation?——Mr. BEALL said that would depend on the answers he received to his questions. (Laughter.)

The resolution proposed by Mr. Ramsay Cooke was carried *nem dis.*

Mr. A. WARD (a director) referred in satisfactory terms to the prospects of the company, and of the ability of their manager, Mr. Skertchley.

A cordial vote of thanks was passed to the Chairman and directors, and the meeting then closed.

NEW CALLAO MINE.

A meeting of shareholders, convened by a circular, signed by Messrs. Beall and Co., Queen Victoria-street, was held at the Cannon-street Hotel, on Tuesday.

In the circular Messrs. Beall and Co. stated that they had been instructed by several shareholders (who were induced to apply for shares in this company on the faith of statements in the prospectus) to look after their interests. After instituting searching enquiries they were warranted in saying that the price alleged to be paid for the property was more than exorbitant, that the property itself was of little or no value, and that there were several material mis-statements in the prospectus. On behalf of some of their clients they had commenced proceedings against the directors for relief, including the return of their money. They were now informed that a petition to wind-up the company had been presented to the High Court of Chancery, and, fearing that a liquidator friendly to the directors might be nominated, they were of opinion that the shareholders interests should be considered, and that a person entirely removed from the influences or bias of the promoters or directors should be appointed, who should thoroughly investigate the circumstances under which the company was brought out, and recover from those who were guilty of neglect of duty any sum improperly paid, so that the shareholders may not be losers, but that they might have refunded to them a large proportion of the money they had subscribed. The circular concluded by stating that Messrs. Beall and Co. would be prepared at the meeting to place before the shareholders the whole of the information in their possession, and take their opinion as to the best course to be pursued for the protection of the shareholders' interests, and their successful maintenance.

Mr. BEALL occupied the chair.

The CHAIRMAN said he would first refer to the objects of the meeting, and, secondly, to the course which he had taken in the interests of his clients.

A SHAREHOLDER said there were shareholders outside the room who were excluded, and he asked that they be admitted?——The CHAIRMAN said he had called this meeting at his clients' expense, and on his own responsibility. He should be anxious that all shareholders should be at this meeting; but when he knew beforehand that persons intended to attend this meeting for the purpose of attacking, it might be himself, or other persons in the company personally, and to create a disturbance, he took upon himself the responsibility of excluding those persons who had no other object than to stifle discuszion, and not allow free deliberation. He had excluded two gentlemen who made an attack upon himself yesterday, and introduced other personal matters.

A SHAREHOLDER: Are they in receipt of this circular?——The CHAIRMAN: I do not know, and I do not care.

The SHAREHOLDER said he was surprised to hear the Chairman say he did not care. He had come up 90 miles, and if he had been excluded he should have deemed it a very hard measure. (Hear, hear.)

A SHAREHOLDER: Would it not be better to let them in, and then turn out any one who disturbs the meeting?——The CHAIRMAN said he would not admit gentlemen who came to disturb the meeting. (Hear, hear.)

Some further conversation ensued on the point, but the CHAIRMAN repeated that the meeting was called at the expense of his clients, and he would not admit gentlemen who came prepared to make a disturbance.

The CHAIRMAN went on to say that at the meeting yesterday he put certain questions which were pertinent to the point at issue, and relating to the petition which had been presented. He was allowed to ask them under the idea that they would be answered. He asked with respect to the statement in the prospectus, that the mine was to the west of El Callao and Callao Bis and Potosi, whether the shareholders were aware that those properties were some 150 miles distant. He also asked whether the statement in the prospectus that no promotion money would be paid was not contrary to fact. Now, if the prospectus had stated that this mine was about 150 miles from those other properties which he had mentioned, he did not hesitate to say that many shareholders would not have invested their money. (Hear, hear.) At the meeting yesterday he asked whether there were not contracts which were not set out in the prospectus, but those questions were not replied to. He contended that 15,000*l.* was an exorbitant sum to charge, and Mr. Pennelly never got more than 2000*l.* of it, the balance going into the pockets of the promoters of the company. He considered that the prospectus was issued deliberately and intentionally with the purpose of deceiving, because the statement that no promotion money would be paid was untrue. The statements in the prospectus were verified on oath; the petitioner was a gentleman in Holy orders, and, therefore, they might assume that an oath was more sacred with him than with some people in the City of London. He asked yesterday whether it was true that 20,000 shares had been applied for at the time the prospectus was issued, and the Chairman of the company replied that the number was 19,800. As they were going to pay 15,000*l.* to the vendors, he did not quite see where any money was to come from for the purpose of working the mine. He thought it was a breach of faith to proceed to allotment on such a small amount, with the chance of getting people afterwards to subscribe. He, therefore, thought it was a fair question to ask what amount had been paid on the shares, what was the amount of arrears, and what amount of working capital would be left for working expenses after payment of the vendor? He was asked yesterday whether he would oppose the winding-up of the company, and he replied that if he were made acquainted with the various facts he should then be able to give an answer as to whether he would allow the company to go on, or wind up the company, and divide what was left amongst the shareholders, and relieve them of all further payment of calls. (Hear, hear.) But the Chairman of the meeting yesterday, declined to say whether the statements were true, and, therefore, he (Mr. Beall) declined to answer the question. If the statements in the prospectus were true, the sooner the company was put an end to the better.

At this point of the proceedings about 20 or 25 shareholders, who had been demanding admission, but had been kept out, forced their way into the room, and loudly expressed their indignation at having been kept out of the meeting, and characterising the conduct of Mr. Beall (the Chairman) as most disgraceful. A noisy dispute was got up in the back part of the room, and one gentleman, who had attempted to act as sort of door-keeper, distinguished himself by giving utterance to oaths and expressions not usually heard in decent society.

A SHAREHOLDER said he should very much like to hear what Mr. Beall had to say against the company.——The CHAIRMAN (Mr. Beall): I decline to continue the meeting whilst there is such a noisy division present. (Oh, oh, and hear, hear.)——The CHAIRMAN, in reply to a question, said that if what was stated in the petition were true, the shareholders were entitled to have their money back.——Several SHAREHOLDERS; "If," a big "If."——The CHAIRMAN: The statements are true.

Major FORTESCUE said that at the time the prospectus was issued, and up to the present time, there was every reason to believe that the mine was a valuable property, and the prospectus gave reasons for that belief. There had been a trial shaft sunk 90 ft., by Mr. Rowbottom, 2½ years ago.

Mr. RAMSAY COOKE said that Mr Rowbottom had such a high opinion of the mine that he wrote to his own relations to buy the property, and not allow it to be brought out.

Major FORTESCUE said he was not aware that any promotion money was paid; the vendor was his own promoter, or employed a promoter.

The CHAIRMAN (Mr. Beall) asked how much purchase-money was divided.——Major FORTESCUE said the whole of the purchase-money was paid by the company to Mr. Reichter.

Mr. RAMSAY COOKE said the mine should have a fair trial, and they could not tell whether the mine was a good one till they tried it. For all they knew the present might be an attempt to depreciate the property, in order to enable it to be bought at a low price. (Cheers.) He said they had all seen the courtesy and truthfulness of Major Fortescue, the present Chairman of the company, and he was sure they could all entrust the business to him. (Hear, hear.)

A SHAREHOLDER asked where the directors expected to get the necessary working capital?——Major FORTESCUE said as far as he could say they had enough money to make a commencement. There was about 10,000*l.* in hand.

Some further discussion ensued, much of it of a personal character, and many uncomplimentary remarks were exchanged.

Mr. GREAVES said that if Mr. Beall could show that the shareholders interests were jeopardised, probably he would find there was not so much antagonism as he seemed to think.

The CHAIRMAN (Mr. Beall) said he declined to be drawn into any personal discussion. (Oh! oh! hear, hear, and laughter).

Mr. GREAVES said he would move that the shareholders of the Callao Company expressed their unabated confidence in the company, and authorised the solicitor to the company to oppose the petition presented by Mr. Brett and Messrs. Beall and Co, and also asking that those shareholders who might have given authority to Messrs. Beall to at once withdraw it in the general interests of the company. (Cheers.)——Mr. RAMSEY COOKE seconded the motion.——The CHAIRMAN: I shall decline to put it.——Mr. GREAVES: Then I will put it myself. Those in favour of it hold up their hands.——The resolution was put and carried by a large majority amidst loud cheers.——Mr. GREAVES: I also move that the conduct of Mr. Beall in refusing admission to the shareholders to this meeting, convened by circular, is deserving of the severest censure.——Mr. RAMSEY COOKE seconded the motion, which was put to the meeting by Mr. GREAVES, and carried.

The meeting, which had been of a noisy and personal character, then broke up in considerable confusion.

SOUTH DOLCOATH MINE.

A special general meeting of adventurers was held at the offices Old Broad-street, on Saturday, March 11; Mr. H. LAMBERT (the purser) occupied the chair, and read the notice calling the meeting.

The notice stated that the meeting was called to audit the accounts, and to make such call as might be necessary for carrying on the development of the mine. The number of shares represented by shareholders present was 2520 and by proxy 1075.

The CHAIRMAN said the requirements of the Stannaries Act demanded that a Cost-book mine should hold a meeting at least once within a period of four months, and as this company had now been at work for that period, the time had come when they must fulfil the requirements of the Stannaries Act. It was a matter of some perplexity in his mind as to where he should summon the meeting—whether in London or in the neighbourhood of the mine; and after considerable deliberation he came to the conclusion that perhaps at this special time of the year, when a long journey into the country was not very desirable, and when the country itself did not present its most inviting aspects, it would be better to hold this meeting in London, more especially as at the present time the bulk of the shares were held in London, and were in the hands of London shareholders. Perhaps by the time another meeting was due they might feel it desirable to pay a visit to the mine, and there meet with their brethren in Cornwall in the Count House on the mine. Before entering upon the main business which had brought them together, it might not be amiss to review their position, and see what had been done. They were generally aware that he stood somewhat in the position of promoter of this mine—promoter, inasmuch as during his visit to Cornwall last July, in passing from Carn Brea to West Basset, he passed by a large area distinguished from other areas, as there seemed to be no work in progress. There was an engine-house, but no smoke issuing from the chimney, as in the others. He made enquiries, and learned that the mine had been standing idle, although the assumption was, according to his informant, that it was in as good geological ground as any of the surrounding mines, but it had been standing idle in consequence of the failure of the previous company six or seven years ago. He made further enquiries, and ascertained a good deal about the property, and consulted with some other friends, and at their suggestion made further investigations, and obtained certain reports upon the property, which led some of those now interested to meet together and determine, to obtain possession of the property if possible. He entered into negociations with the proprietor, and came to terms, whereupon a contract for the purchase was signed, and a portion of the purchase money paid on Sept. 24. That was one great point gained. On Oct. 18 they met together in Cannon-street, and incorporated the company. He need not enter into the various details, his only object being to mark the leading events which had occurred from the inception of the company up to the present time. No sooner was the company incorporated than steps were taken, in pursuance of the resolution passed on Oct. 18, to set things in working order again. He found that the engine had become incapacitated, having stood still six or seven years, being then in a very dilapidated condition, and so also were the other articles of gear upon the mine, especially those which were constructed of wood, which had been either partially destroyed by exposure to the weather, or had given way under the influence of dry rot, where not so exposed, so that a rectification of the arrangements was in most cases necessary. However, the work was pushed on so vigorously that the engine (the greater part of which was taken away and returned) was tested and set to work on Dec. 5. They, therefore, lost no time in carrying into effect the resolution passed in October. (Hear, hear.) Before reading the agent's report on the table, he should like to call attention to two points—the first was it was a fact, which was growing more and more apparent, that the sett was in an extremely advantageous position. It was surrounded by a number of the very best mines in Cornwall. For example, on the north there were Dolcoath, Cook's Kitchen, and Tincroft, and a little north of these East Pool. On the southern boundary were West Basset, Wheal Grenville, and South Frances, and in close contiguity was South Condurrow. All these mines were immediately surrounding South Dolcoath; therefore, he took it that a mine so situated must share in the geological advantages which rendered the surrounding mines so exceedingly productive. (Hear, hear.) This was a point which he would earnestly impress upon shareholders and would-be shareholders. What had been done in the past did not very much concern them, but he might tell them that 3000*l.* worth of copper had been removed from one lode, which showed that they were working in productive ground. The next point to which he would call their attention (which was, perhaps, only second in importance to that which he had already mentioned) was the management of the mine. When he was in the district he had the privilege of going over many of the mines, amongst others Violet Seton and West Roskear, in the neighbourhood of Camborne, and he was very much struck with the appearance of order, and the strong indications of a master-mind regulating the organisation which prevailed on those mines. He was introduced to the manager of them, and a certain amount of correspondence took place, both verbally and by letter, and he ascertained that Capt. J. Nicholls would be prepared to give the company the benefit of his supervision for South Dolcoath. The result was an arrangement was made with him, and he felt that the shareholders had at the present moment, and would have stronger reasons as time developed the mine to congratulate themselves that the services of that gentleman had been secured. (Hear, hear.) There was one other point to which he would refer. When they acquired possession of the property it was a question whether the company should be incorporateed under the Limited Liability system, or whether they should adopt the Cost-book system. A great deal of discussion ensued on the point, and the question was locked at from every point of view, and the Cost-book system was ultimately decided upon. He thought he could lay before them a few facts, showing that the right system had been adopted. In the *Mining Journal* of Feb. 18 was a tabular statement, compiled by Mr. Edward Ashmead, giving the returns made by a large number of British mines during the year 1881. During the year 1881 there were in all 25 dividend paying mines in Great Britain, of which number 15, or three-fifths were Cost-book mines. In Cornwall there were 15 mines which paid dividends, and out of those 15 no less than 14 were Cost-book mines; and of these 14 dividend-paying Cost-book mines no fewer than seven were situated immediately surrounding this company's property. He would read the names, and show the amount of dividend paid last year by each. Carn Brea paid 7500*l.* in dividends, Dolcoath 24,165*l.*, East Pool 26,720*l.*, South Condurrow 4898*l.*, Tincroft 4500*l.*, West Basset 6000*l.*, and Wheal Grenville 2250*l.*, making a grand total of 76,033*l.* paid to the shareholders in one year by seven Cost-book Cornish mines, and this 76,033*l.* was more than half the total amount of dividend paid by all the 25 British dividend-paying mines. (Hear, hear.) Of course, they were not met to discuss the comparative merits of the Cost-book system as opposed to the Limited Liability system, but he thought the figures he had quoted contained a strong argument in favour of the course which had been adopted in connection with this company. (Hear, hear.) There was one little matter which was indicative of the favour with which this course was viewed, especially in the immediate locality, which was that out of the 60 shareholders composing the company no less than 50 were resident in Cornwall, and more or less in the neighbourhood of the mine, and 10 only were resident elsewhere. He thought this was good evidence that the course adopted was fully approved by those who might be supposed to know best about the comparative merits of the district. (Hear, hear.)

Mr. R. KENNETT: It certainly shows their confidence.

Mr. TONKIN said the shares were never pressed for sale in the neighbourhood in any way whatever.

The CHAIRMAN: No; the shares were not thrust down their throats. I will

now read the report, dated March 8:—

March 8.—**Engine Lode:** We find extensive workings for about 50 fms. in length to the east of the western cross-course, and we have four men driving through the cross-course to find the corresponding bunch to the west, and have no doubt we shall discover a great extent of very profitable ground in this direction. The caunter-lode yielded considerable quantities of rich ores about the western cross-course, and we consider it a very desirable point to see this lode about where it crosses the east cross-course, especially as about this point it comes in contact with the engine lode, and at such intersections riches are generally found. The 20 and 40 fm. levels are each driven about 25 fms. east. The 60 is said to be extended to very near the cross-course, but it is full of attle. We hope soon to be in a position to clear this, and prove the junction of the engine and caunter lodes above referred to, and also to extend east of the cross-course, where we have a great extent of virgin ground which, in our opinion, will prove by far the richest part of the mine.

Copper Lode: The ground in the 30, east of flat-rod shaft, is rather hard, and the lode, although small, has fair indications for improvement, and as the lode in the middle shaft is softer, and presents much better indications, we expect the ground to ease and the lode to improve soon. Our object in driving this now is principally to be prepared for an increase of water in the eastern ends, and also to be able to bring up a deeper level under the ore ground. The shoot of ore appears to dip west pretty fast, and the lode in the 20 is now 3 ft. wide, and worth 8*l.* per fathom, and looks like entering the productive shoot of ore driven through in the 10. When we resumed driving the 10 east the lode was only 6 in. wide, and the price for driving 6*l.* 10s. per fathom, but it has gradually got easier, and is now driving at 30s. per fathom; the lode for the last 6 fathoms has averaged worth 6*l.* per fathom, and is now producing a little tin, with excellent indications for very soon reaching a profitable bunch of copper ore, and as this end is about 30 fathoms from the cross-course we expect a continuation of profitable ground. The stopes in the back of this level are yielding 7*l.* worth of copper ore per fathom; the price for stoping is 3*l.*, and we have about 100*l.* worth of ores already at surface. There is also a flat tin lode to the north underlying rapidly towards our copper lode, which we consider of great importance, and it will soon have our attention. The repairs to machinery and buildings, new timber, wire ropes, and iron work have increased our costs, but most of the expenses in future will be for opening the mine, and from present appearances we shall soon be returning mineral to materially assist, and if one or two of the points only come up to our expectations we shall agreeably surprise most of the adventurers. To the east of the eastern cross-course we have a great length of entirely unexplored ground, and from its configuration, together with the composition of the strata and the lodes, and being parallel to the riches in the mines to the north and south, we are sanguine of opening a profitable mine.—JOHN NICHOLLS, WM. CURTIS.

Mr. TONKIN said he believed the lode which was productive to the cross-course was correspondingly productive on the other side.

Mr. R. KENNETT asked how far the mine extended in that direction?——Mr. TONKIN said there was ground enough for very many years. He had no doubt they would find lodes on the other side of the cross-course. In the ordinary course of events they looked for a little more water when the level approached the cross-course. The water charges in this mine were very low, and it was kept drained by working the engine only 16 hours out of the 24. The 30 was not driven under the shaft, so that if more water came in than came by percolation they ought to be prepared to take down the water from the middle of the shaft. It might not be required but it was minerlike to be prepared for it. The 30 was 8 or 10 fms. from the shaft. The water there had to be drawn by horse-power to drain the mine, but since the mine had been drained it had not increased. If it came in larger quantities it must be got out by some other means. Eventually it would go down of its own accord.

The CHAIRMAN said he believed the 30 had been opened up to some extent, but was now full of debris; he would ask what the level had produced?

Mr. TONKIN said it was productive in some parts, and in the latter part of the working it was productive for tin, they having got into a tinny lode, but the former workers worked for copper, and Capt. Nicholls believed there were on the ground many hundreds of tons of tin thrown away by the old workers. (Hear, hear.) In fact, he himself had had ocular demonstration of that fact, having had samples taken on Monday last.——Mr. R. KENNETT said this was a very important fact. He believed they had some copper ore at surface?

Mr. TONKIN said they had about 100*l.* or 150*l.* worth. Under the former working the grey ore fetched about 40*l.* per ton. It was barely 3 months since the engines were put to work, and they had to drain the mine and square the shaft, so considering the shortness of the time, he considered good progress had been made. (Hear, hear.)——Mr. R. KENNETT: I think we have done very well.

The CHAIRMAN: Fortunately for us the weather has been very mild, and the work has never been brought to a stand-still.

Mr. TONKIN said it argued well for the property that several of the old shareholders, as soon as they knew the mine was to be resuscitated, came in at once and took shares. (Hear, hear.) Of course, the existence of the contiguous mines to some extent accounted for the water in this mine being so light. He might mention that for the whole of last month the cost of the engine was only about 27*l.* There would be nothing in the shape of extra cost, and the money would be spent in productive labour—that was to say, in opening up the ground and working the levels. During the last working, in order to attenuate the money at their disposal, the old workers worked away all the mineral immediately in sight, thus leaving it to the present adventurers to extend the levels. Another good feature which he might mention was that some tributors had offered to take pitches, which they would not have done if they had not considered there was a good chance of getting returns.

The CHAIRMAN then presented the Cost-book, which showed a small balance in Cornwall of 23*s.* 10*d.* He also presented the merchant's bills, showing an amount due of 371*l.* 19*s.* 9*d.*, for goods supplied during the four months. There was 7*l.* 10*s.* 9*d.* in hand in London.

On the motion of Mr. R. KENNETT, seconded by Col. BARNARD, the accounts and balance-sheet were passed.

Col. BARNARD then proposed a call of 2*s.* per share on 5000 shares, payable forthwith to Messrs. Williams, Williams, Grylls, and Co., Truro, or to Mr. Lambert, at the London office.——Mr. R. KENNETT seconded the motion, which was put and carried.

On the motion of Mr. R. KENNETT, seconded by Col. BARNARD, a resolution was passed authorising the purser to overdraw on the bank to an amount not exceeding 500*l.*, which is covered by calls.

The CHAIRMAN then moved that the report of the manager be adopted and printed, and sent round to the shareholders with copies of the accounts, and also that the thanks of the meeting be presented to Capt. Nicholls and his staff for their vigorous prosecution of the work entrusted to them by the shareholders.

Mr. TONKIN seconded the motion, adding that the shareholders were very much indebted to Capt. Nicholls, who had thrown much energy into the concern.

The resolution was carried.

The CHAIRMAN said he hoped that when they met their Cornish friends on the mine, that they would have every reason to congratulate each other upon having a very excellent property. (Hear, hear.)—The meeting then broke up.

GREAT WESTERN COLLIERY COMPANY.

The fourth annual meeting of shareholders was held on Wednesday, at the offices of the company, Bristol, and there was a good attendance,

Mr. S. LAING, Chairman of the directors, presiding,

The report of the directors was taken as read.

The CHAIRMAN, in moving the adoption of the report and accounts, said the must ask the shareholders to look back to what their company was at the commencement. They commenced with no working capital, with no means whatever, and they had now brought them to the fourth ordinary meeting. He asked them, with the report they had in their hands, to consider this, because when they saw that the profit of the past year's trading was 13,301*l.* 14*s.* 3*d.*, against 5006*l.* 5*s.* 11*d.* in 1880, he considered it was a matter of congratulation to the shareholders. They saw that they had gradually improved; and though the price of coal had not been what they might call good in the past year, they had still presented a satisfactory report. After debiting different amounts to the revenue account, including 876*l.* 1*s.* 4*d.* held in suspense at their last meeting, and 1156*l.* 9*s.* 6*d.* expended during the past year on new boilers, there remained for the year 1881, 7200*l.* 15*s.* 9*d.*, out of which was paid on Jan. 2 the dividend due on the 10 per cent. preference shares of class A. The directors now recommended a further dividend in the A shares of 5*s.* per share, amounting to 2000*l.* odd. The shareholders must recollect that the directors had a hard and very difficult task to bring the company to that position, and very often they had felt it was a serious thing to undertake what they had in hand. He assured them that the directors had done their utmost, not only in selling their stuff, but in putting it into markets from which they hoped to have future demands. The trials of their coals had been of the most satisfactory character. The output of coal had 261,372 tons, which was an increase of of 26,992 tons compared with the previous year. He thought the way in which the colliery had been laid out had a great deal to do with the wonderful increase of the power of their output. Messrs. Foster, Brown, and Adams, of Cardiff, deserved their thanks for what they had done at the top and bottom of the pit. They would see that the lessors had agreed to cancel the covenant in the steam coal lease to erect new coke ovens in consideration of the company putting up proper compressed air machinery for underground haulage, which, in consequence of the increasing development of the colliery, had become a necessity. That they considered one of the most politic arrangements, as their colliery was getting deeper, and it was considered the finest thing the company could do was to substitute for the coke ovens the compressed air machinery for underground haulage. The erecting of the coke ovens was only deferred, but the haulage was of primary importance, and they thought they had better introduce it. (Hear, hear.) He thought the report was a very strong one, and that any shareholder ought to be satisfied with it. Let them remember he was only an original shareholder, and if he took an interest in the company, and believed it was doing well, he held only the last shares on their list. (Cheers)——Mr. JOSEPH WETHERED seconded the resolution.

Mr. DOWNING, Cheltenham, asked what benefit they derived from their subscription to the Monmouthshire and South Wales Colliery Association, and also what was the improved price of coal per ton for 1881 as against 1880.——The CHAIRMAN explained that they considered the amount of their subscription to the Monmouthshire and South Wales Colliery Association well laid out, and as to the price of coal it was about 7*d.* per ton better.

Mr. J. INSKIP, Chairman of the Taff Vale Company, referred to the usefulness of the association as providing a representative body who could negociate if the need existed.——The resolution was then put, and adopted unanimously.

On the motion of the CHAIRMAN, seconded by Mr. J. MILLER, the directors were empowered to pay 5*s.* per share in the A shares on April 1 next.

Mr. H. C. PERRY said two years ago they voted the directors 400*l.* for their remuneration, and there were then only three directors. At the end of 1880 it turned out that the working of the colliery, in consequence of an accident, had not been so good as it was hoped, and the directors very generously, instead of charging 400*l.* as voted, charged only 300*l.* He represented by himself and friends all four classes of shares, and the accounts were so vastly improved that they should put the directors on the footing they were two years ago. He thought they should at least vote them 400*l.*, and the extra 100*l.* which they gave up at the end of the year. He, therefore, proposed that 500*l.* be divided among the directors, bearing in mind their board was now composed of five instead of three. It looked as if the B shareholders had a dividend in sight at the end of the year.——Mr. B. S. STOCK seconded the resolution.

Mr. J. WETHERED said except in South Wales collieries were in a miserable plight, and were drawing on the bank of hope for the future, and on their bankers for present sustenance. South Wales collieries were an exception, and smokeless steam coal was the cry of the whole world, and that they could only get at Cardiff, Swansea, and Newport. (Hear, hear.)

Mr. C. J. LOWE, replying to a remark of Mr. B. S. STOCK, said they could increase their capital by the issue of more A debentures, but it was a question whether it would be wise to issue them.——The motion was carried.

Mr. J. WETHERED moved that 250*l.* be paid to Messrs. Brown and Adams, as viewers of the colliery, and he said he hoped next year all the shareholders would get 10 per cent., and then they could give Messrs. Brown and Adams proper remuneration.

Mr. J. HUDSON SMITH (director of the Rhymney Railway Company) seconded the resolution, which was carried.

On the motion of A. LEVY, seconded by Mr. DOWNING, Mr. T. Forster Brown was re-elected a director.——Afterwards, on the motion of Mr. J. TOWNSEND, seconded by Mr. C. H. JAMES, Merthyr Tydfil, Mr. J. Wethered was re-elected a director.

On the motion of the CHAIRMAN, seconded by Mr. T. WILLIAMS, of Merthyr Tydfil Mr. G. E. Swithinbank was again appointed auditor.

Thanks to the Chairman and directors terminated the meeting.

PELYN WOOD COPPER MINE.

The four-monthly meeting of shareholders was held at the offices of the company, Great Winchester-street, on Tuesday,

Mr. CHRISTOPHER ROBINS in the chair.

Mr. WILLIAM BATTYE (the secretary) read the notice convening the meeting, and the minutes of the preceding meeting, which were confirmed. The accounts were presented, showing that the call of 6d. per share made at the preceding meeting realised 300*l.*, and that the balance in hand at the date of the closing of the accounts was 27*l.* 2*s.* 4*d.*——The CHAIRMAN moved the adoption of the accounts, and Mr. ALLEN seconded the motion, which was carried *nem dis.*——Upon the question of the re-election of the committee of management, the SECRETARY stated that he had received a letter from Mr. Gabbott that his business was of such a nature as to prevent his continuing to act as a member of the committee.

It was suggested that Mr. Allen should fill the vacancy thus caused, and on the motion of Mr. T. H. BENNETT, seconded by Mr. R. BENNETT, the following gentlemen were elected the committee of management for the ensuing four months:—Messrs. C. Robins, M. Miray, T. Bremner, T. Allen, and A. S. Clunes.

The agent's report was read and adopted.

A SHAREHOLDER: How many fathoms are you driving a month?——Mr. BENNETT: About 11 fms. a month.

The SHAREHOLDER: Then in less than three months you may expect to meet the junction of the two lodes?——Mr. BENNETT: Yes.

The SHAREHOLDER: At what depth from surface will the junction be met with?

Mr. BENNETT: About 35 fms., and the first junction will be reached by driving about 18 fms. The distance between No. 1 and No. 2 lodes is about 33 fms., and between No. 2 and No. 3 lodes about 11 fms., so that the junctions of the three lodes will be reached within a short distance.

The CHAIRMAN: How will you get on for air?——Mr. BENNETT: We have an air machine which gives us an abundance of air.——In reply to a further question, Mr. Bennett said they were working with three sets of men on tribute. They had now nine men at work.

The CHAIRMAN said he hoped that at the next meeting the committee would be able to put before the shareholders a very good report, showing that some good east and west lodes had been opened up similar to those which had been so productive at the Lanescott and other mines in the district. All the mines in the neighbourhood had been worked with great success, and there was no reason whatever why this mine should not do equally well. The geological features were the same, and there was every reason to expect good results.

The SECRETARY added his belief that they were in exactly the same zone as the Lanescott Mine, and their prospects were just as encouraging. The only thing for them to do was to persevere on the moderate scale upon which they were working, and with the small expenditure of money which was now being laid out. He thought they would in the course of a very few months meet with the lodes which had been seen at surface. Three distinct lodes had been costeamed by their agent, and within three or four months these lodes would in all probability be met with at a depth of 30 or 40 fms. from surface, and there was every chance that they would have deposits of copper as rich as those which had been met with in the adjoining properties.

Mr. BENNETT said he regarded the elvan course as a very great feature in the property, and the CHAIRMAN added that he should look for a considerable improvement in the lodes as they approached the elvan-course.

A call of 6*d.* per share was made, and a resolution was passed indemnifying the trustees for the sett.

The meeting then closed, with a vote of thanks to the Chairman.

AKANKOO GOLD COAST MINING COMPANY.

The report of the directors prepared for presentation at the meeting on March 27 states that the company was registered on Feb. 2, 1881. The expedition to examine the mine sailed from Liverpool on March 23, and returned on July 2. Consequent on the report of the engineer, Mr. Cornish, the directors decided to purchase the mine, subject to the title being approved by the company's solicitors. Great delay was unavoidably caused by the sudden death of the original owner of the mine, Mr. Bonnat, through whom the title came, and, as he was a French citizen, this delay was prolonged by the requirements and intricacies of French law. Consequently the title to the mine was not approved by the company's solicitors, and the purchase could not be completed until Nov. 8. A period of four months was unavoidably lost owing to this unfortunate occurrence, to say nothing of the additional expense which the delay caused the company.

Looking to the great importance of selecting a competent manager and engineer, the directors took every possible pains to endeavour to find a thoroughly reliable man, and finally their choice fell upon Mr. Edmund Lane, who was definitely appointed on Oct. 18. The present position of affairs is this: An assistant of Mr. Lane, who has had 12 years' experience on the coast, sailed from Liverpool for Axim on Feb. 25 in charge of a couple of surf boats and stores, and with instructions to engage native labour and clear the approaches to the mine and the site for the works and houses. A steam launch is in course of construction by Messrs. Forrestt, of Limehouse, the well-known builders, and will, it is expected, be completed about the middle of April. A lighter for conveyance of machinery and heavy stores from Axim to the mine is also in an advanced state of construction. Houses for the use of the manager and the white workmen are now being made by Messrs. Isaac Dixon, of Liverpool, and are nearly completed. It is proposed that Mr. Lane and staff shall leave England as soon as possible in charge of the foregoing, and commence operations for opening up the mine. The question of efficient machinery is occupying the serious attention of the directors and managers.

Commander V. L. Cameron, R.N., and Mr. Robert Milburn, having recently resigned their seats at the board, the directors have elected to the vacancies Lieut.-Col. G. Arbuthnot, a very large shareholder, and Mr. L. Wyatt, formerly magistrate and Commissioner at Axim (Gold Coast), where he resided three years; their election, it is hoped, meets with the approval of the shareholders. Mr. Wyatt's experience and knowledge of the Gold Coast and of the native population will no doubt be of great assistance to his colleagues. Mr. William Bellingham having resigned his post as secretary, the board have appointed Mr. Herbert Canning to the vacancy. The claim of Messrs. Jordan, re machinery, has been settled for 900*l.*, being 100*l.* less than the limit authorised by the extraordinary general meeting of shareholders of Jan. 23.

In conclusion, while the directors much regret the delay which has occurred in opening up the mine, from causes beyond their control, the shareholders may rely that every exertion will be made to develope their property at the earliest practicable moment, when the directors trust the results will be so satisfactory as to make amends for the disappointment the shareholders may have experienced owing to the unforeseen difficulties which have occurred to retard the operations of the company.

NORTH BUSY.—The meeting just held was deemed satisfactory, and if the large attendance be any guide, coupled with the encouraging remarks of one or two practical shareholders present, we shall look to see a good deal more doing in these shares. It was said that an improvement in the bottom end was almost a certainty. We hope it may soon occur, and so advance the value of the property of a deserving body of shareholders.

GREEN HURTH.—A meeting of shareholders was held at the company's office, Newcastle-upon-Tyne, on Tuesday (Mr. J. C. Swan in the chair). Mr C. W. Harrison (the secretary) having read the notice convening the meeting, the Chairman, in moving the adoption of the balance-street and reports, congratulated the shareholders on the result of last year's operations, which had been more favourable than in any previous year. Although the price of lead had been lower than at any time during the past ten years, except in 1879, the directors had been able to pay 14*s.* per share in dividends on a called up capital of 6*s.* per share. The Chairman also stated that a large amount of rich ground had been laid open, and that on sinking operations being resumed in Swan shaft the vein was found to be rich in depth, the agent, Capt. Polglase, estimating the value of the lode at 5 tons lead ore per fathom at the point to which the shaft has now been sunk. The retiring directors, Messrs. J. C. Swan and D. Frazer, and the auditors, Messrs. Holmes, Spence, and Co., were re-elected. Capt. Polglase, who was appointed agent at the mine on the resignation of Mr. Wm. Vipond, was present at the meeting, and spoke in high terms of the present position and future prospects of the mine. The services of the Chairman in connection with the business of the mine, and as President of the meeting having been cordially acknowledged, the proceedings terminated.

IQUIQUE.—A telegram from Iquique (Jan 21) says that the Union nitrate works had suspended operations. The labourers had struck, and had ommenced rioting, owing to a general reduction of wages in all the nitrate stablishments.

PROVINCIAL STOCK AND SHARE MARKETS.

CORNISH MINE SHARE MARKET.—Mr. S. J. DAVEY, mine sharedealer, Redruth (March 16), writes:—There has been more demand for several mines in our market this week, and prices have been very sensitive. East Pools have risen 6*l.* 10*s.* on the week, and buyers expect a 40*s.* dividend at the next meeting. West Setons advanced 6, but do not close at their best. Wheal Peevors advanced 30*s.* on better reports from the mine. Agars fell 10*s.* Settling checks business to-day. Prices are as follows:—Blue Hills, 1¾ to 2; Carn Brea, 17½ to 18; Cook's Kitchen, 32 to 32½; Dolcoath, 81 to 82; East Blue Hills, 7*s.* 6*d.* to 12*s.* 6*d.*; East Pool, 56½ to 57½; Killifreth, 50*s.* to 52*s.* 6*d.*; Mellanear, 4½ to 5; New Cook's Kitchen, 5 to 5⅛; New Kitty, 2 to 2¼; North Busy, ⅜ to ⅜; Phœnix, 3 to 3¼; Pedn-an-drea, 4½ to 4⅝; South Condurrow, 9 to 9⅛; South Crofty, 8 to 8⅛; South Frances, 14 to 14⅛; Tincroft, 14 to 15; West Basset, 13¼ to 14; West Frances, 11⅛ to 12; West Kitty, 8¼ to 8⅛; West Peevor, 13¾ to 14; West Poldice, 5¾ to 6; West Polbreen, 1¼ to 1⅜; West Tolgus, 17⅛ to 20; West Seton, 31 to 33; Wheal Agar, 15½ to 16; Wheal Basset, 5 to 5⅛; Wheal Grenville, 11 to 11⅛; Wheal Peevor, 11¾ to 12⅛; Wheal Kitty, 1⅛ to 1⅜; Wheal Prussia ⅞ to 1⅛; Wheal Uny, 3 to 3¼; Trevaunance, 2 to 2¼; Violet Seton, 17½ to 20.

— Mr. J. H. REYNOLDS, stock and share broker, Redruth (March 16), writes:—Business has been chiefly confined during the week to East Pool, Wheal Agar, Cook's Kitchens, Killifreths, Pedn-an-dreas, and West Setons. Other shares mostly neglected. At Carn Brea meeting to-day no dividend was declared. Subjoined are the closing quotations:—Blue Hills, 1 to 1⅛; Carn Brea, 18¼ to 18¾; Camborne Vean, 2*s.* 6*d.* to 7*s.* 6*d.*; Cook's Kitchen, 31½ to 32; Dolcoath, 81 to 81½; East Pool, 55½ to 56; East Blue Hills, 10*s.* to 12*s.* 6*d.*; Killifreth, 2½ to 2⅝; Marke Valley, ⅝ to ⅞; Mellanear, 4½ to 4¾; New Cook's Kitchen, 4½ to 4¾; New Kitty, 2 to 2¼; North Busy, ⅜ to ½; North Herodsfoot, 7*s.* 6*d.* to 10*s.*; North Penstruthal, ½ to ⅝; Pedn-an-drea, 4½ to 4¾; Phœnix, 2⅞ to 3; South Condurrow, 9⅛ to 10; South Crofty, 8½ to 8¾; South Frances, 14½ to 14¾; Tincroft, 14½ to 15; West Basset, 13½ to 14; West Frances, 11½ to 12; West Kitty, 8¼ to 8⅝; West Peevor, 13¾ to 14; West Polbreen, 1 to 1⅛; West Poldice, 5¾ to 6¼; West Seton, 30 to 32; West Tolgus, 17 to 19; Wheal Agar, 15½ to 16; Wheal Basset, 5 to 5¼; Wheal Boys, 1½ to 2; Wheal Grenville, 11 to 11⅛; Wheal Hony and Trelawny, 2 to 2⅝; Wheal Jewell, ½ to ⅝; Wheal Kitty, 1⅛ to 1¼; Wheal Peevor, 11¾ to 12; Wheal Prussia, 1 to 1⅛; Wheal Uny, 2¾ to 3; Wheal Jane, 1 to 1⅛.

— Messrs. ABBOTT and WICKETT, stock and share brokers, Redruth (March 18), write:—The only important feature in the market this week has been a rise of 6*l.* in East Pools to 57, in consequence of the improved condition of the mine, and the probability of a larger dividend at the next meeting. At Carn Brea no dividend was declared to-day, but a favourable report was presented; shares unaltered. Pedn-an-dreas, Killifreths, and West Setons, dealt in at quotations. Closing quotations annexed:—Blue Hills, 1 to 1⅛; Camborne Vean, ¼ to ⅜; Carn Brea, 18¼ to 19; Cook's Kitchen, 31½ to 32; Dolcoath, 81 to 82; East Blue Hills, ½ to ¾; East Pool, 56 to 57; East Uny, ¾ to 1; Killifreth, 2⅜ to 2⅝; New Cook's Kitchen, 4½ to 5; New Kitty, 2 to 2¼; Pedn-an-drea, 4½ to 4¾; Santa Gertrude, 170 to 175; South Caradon, 27 to 30; South Condurrow, 9 to 10; South Crofty, 8 to 8¾; South Frances, 14 to 14½; Tincroft, 14 to 15; West Basset, 13½ to 14; West Kitty, 8 to 8½; West Poldice, 5½ to 6; West Peevor, 13½ to 14; West Polbreen, 1 to 1⅛; West Frances, 11½ to 12⅛; West Tolgus, 17 to 19; West Seton, 30 to 32; Wheal Agar, 15½ to 16; Wheal Basset, 4¾ to 5; Wheal Grenville, 11 to 11⅛; Wheal Jane, 1 to 1¼; Wheal Kitty, 1 to 1¼; Wheal Peevor, 12 to 12½; Wheal Uny, 2¼ to 3.

— Mr. M. W. BAWDEN, Liskeard (March 19), writes:—The mining market presents no material change, and prices remain much the same with the exception of East Pool, which have advanced to 53½ buyers. Closing quotations are annexed:—Bedford United, 1⅜ to 1¼; Carn Brea, 18 to 18½, x. d.; Cook's Kitchen, 31½ to 32; Dolcoath, 81½ to 82; Devon Consols, 6½ to 7; East Caradon, ⅛ to ¼; East Herodsfoot, 1 to 1⅛; East Pool, 52½ to 53; Gawton United, ⅛ to ⅜; Glasgow Caradon, ¾ to ⅞; Gunnislake (Clitters), 2⅞ to 3; Herodsfoot, ⅛ to ¼; Hingston Down, ⅞ to 1; Killifreth, 2½ to 2⅝; Marke Valley, ¾ to ⅞; New West Caradon, ⅛ to ¼; North Herodsfoot, ⅛ to ¼; Old Gunnislake, ⅛ to ¼; Phœnix United, 3⅛ to 3¼; Prince of Wales, ⅛ to ⅜; South Caradon, 25 to 26; South Condurrow, 9 to 9¼; South Crofty, 8¾ to 9; South Devon United, 1 to 1⅛; South Frances, 14¼ to 15; Tincroft, 14 to 14½; West Basset, 13 to 13½; West Caradon, ¼ to ⅜; West Frances, 11⅛ to 12; West Mary Ann, 1 to 1⅛; West Phœnix, 1 to 1⅛; West Seton, 29½ to 30; Wheal Agar, 15½ to 16; Wheal Basset, 5 to 5¼; Wheal Crebor, 2¼ to 2⅜; Wheal Grenville, 11¼ to 12; Wheal Hony and Trelawny, 1¾ to 2; Wheal Kitty, 1¼ to 1¾; Wheal Jane, 1 to 1⅛; Wheal Peevor, 10½ to 11; Wheal Uny, 3⅛ to 3¼. Phœnix United Mines sold 45 tons of tin on Friday last at 63*l.* 15*s.* per ton, the result of four weeks' working.

— Mr. JOHN CARTER, mine sharedealer, Camborne (March 19), writes:—West Setons have improved up to 34, closing rather weaker at 31 to 33. East Pools have advanced to 56½ to 57. Wheal Peevors have also been in request. Carn Breas are lower at 18 to 18½. At the 16 weeks' meeting held to-day a profit of 302*l.* was shown; the costs were heavy, amounting to 15,449*l.* Prices annexed:—Carn Brea, 18 to 18½; Cook's Kitchen, 31½ to 32½; Dolcoath, 81 to 82; East Pool, 56½ to 57; East Blue Hills, 10*s.* to 15*s.*; Killifreth, 49*s.* to 51*s.*; Mellanear, 4¾ to 4⅞; New Cook's Kitchen, 4 to 4½; New Kitty, 2½ to 2⅝; Pedn-an-drea, 4¾ to 4⅝; South Condurrow, 9 to 9⅛; South Crofty, 8 to 8⅛; South Frances, 14⅛ to 14⅜; Tincroft, 14 to 14½; West Basset, 13⅝ to 13⅞; West Frances, 11¼ to 12; West Peevor, 13¾ to 14¼; West Poldice, 5¾ to 6; West Seton, 31 to 33; West Tolgus, 20 to 22; Wheal Agar, 15⅝ to 15⅞; Wheal Basset, 5 to 5⅛; Wheal Grenville, 11¼ to 11⅜; Wheal Kitty, 1 to 1¼; Wheal Peevor, 11¼ to 11¾; Wheal Uny, 3 to 3¼; West Kitty, 8¼ to 8½.

MANCHESTER.—Messrs. JOSEPH R. and W. P. BAINES, sharebrokers, Queen's Chambers, Market-street (March 16), write:—Notwithstanding the easy condition of the money market, and the unprecedented mildness of the weather, the business done during the past week is only moderate in extent, although figures for most speculative stocks have been moving upwards. The fortnightly settlement occurring during the week has doubtless restricted fresh business, for after carrying over day fresh buoyancy was displayed in prices, and since then a fair amount of business has passed at enhanced rates, take it all round. The market for investment securities still lacks animation, most in the shares of trading concerns, but taken all round, though lots changing hands are comparatively few, the tone evinced by changes in quotations keeps pretty steady.

BANKS show a straggling business, figures, however, are very fairly sustained in dealings. Quotations exhibit few changes of moment, and the balance of movement is well maintained. Manchester and Liverpool District and Manchester and Joint-Stock being each ½ higher, whilst National Provincial Ordinary and Liverpool Commercial are ½ and ¼ lower respectively.

INSURANCE.—Though prices have undergone pretty general revision, with a result in favour of advances, the number of lots changing hands have been but few, the only instances of other than almost solitary transactions being Boiler Insurance and Steam Power and Lancashires, the former at steady figures, and the latter showing gradual but slight advance. Thames and Mersey Marine have been quoted fractionally down during the week, but have since rallied, and now exhibit no quotable change from last week's figures.—Higher: Ocean Marine, 1; Liverpool and London and Globe, 5/16; Lancashire, ¼; Royal (Liverpool), ¼; British and Foreign Marine, ⅛; Maritime, 1/16; Queen, 1/16; and Sea, 1/16.—Lower: United Fire Re-Insurance, ½; and Manchester, ½.

COAL, IRON, &c., AND MINING.—As the mild weather continues the chance of a fair ordinary spring demand for coal diminishes or disappears, and this will account for quietness in the shares of exclusively coal companies. The inactivity in the shares of iron and kindred mineral companies is not so easy to account for, but the fact remains that this description of investment commands but little attention; still figures, except in one or two instances, exhibit little or no adverse change worth mentioning, whilst there are a few distinct changes for the better. Bolckow, though not much done in, are stronger; Ebbw Vales neglected, and quotations about the same as a week ago. Higher: Tharsis Sulphur and Copper, 1; Telegraph Construction and Maintenance, 1; Park Gate Iron, ¼; Gaslight and Coke (ordinary), ½; Bolckows (fully paid), ⅛; Cammell, ¼; Llynvi and Tondu (ordinary), ⅛; and Ebbw Vales, 1/16.—Lower: Palmer's Shipbuilding (A), 2¾; ditto (B), 1⅛ (both now ex. div.); Easte's Shipbuilding, ⅛; Chillington Iron, 7/16; John Brown's, ¼; Sheepbridge Coal, &c., ⅛; Indian Glenrock ⅛; South Indian Gold, ⅛ and Canadian Copper, &c., 6*d.*

COTTON SPINNING AND MANUFACTURING.—During the past few days of the week under notice prices in these securities moved upwards, and some distinct advances were established; but yesterday and to-day quietness has again ruled, and best points are not maintained. The relapse is not material, however, as yet, but the market is very sensitive.

TELEGRAPHS AND TELEPHONES.—The former have made further decided upward movement, Anglos of all issues being by far the most prominent; indeed, the advances in others are rendered insignificant by the rise in these. Anglo Ordinary are 1¼; ditto Deferred, 1½; ditto Prefered, ¾; West India and Brazil, 3/16; and Direct United States Cable, 1¼ higher. Lancashire and Yorkshire Telephone, though done repeatedly, are quieter than of late; they are, however, after fluctuations, just the turn better than a week ago.

CORPORATION STOCKS, &c., keep firm with not many lots offering, where changes they are better.——CANALS neglected and unaltered in prices.——MISCELLANEOUS, beyond a decline of 1 in Union Plate Glass and ¼ in Rylands, and a further advance of ¼ in Manchester Carriage B, there is little to notice. Household Stores are distinctly easier. Bodegas rather better.

RAILWAYS.—The easier tone of the money market, a continuance of genial weather, and the account just passed showing a balance of stock open for the fall, have all contributed to assist prices, which record a substantial advance on the week, notably Scotch stocks, Southern lines, Great Westerns, Lancashire and Yorkshires, Londons, and North Easterns. In Canadians there is a contention as to the policy of the directors of the Great Western Company, and as a contest will be provoked at the coming meeting, it is supposed the shares are being bought for that purpose, and a distinct rise is established. Rumours of amalgamation have also been set afloat, and Grand Trunks, too, are better. Numerous and heavy fluctuations have occurred in Americans and the tone to-day is firmer.

NEWCASTLE-ON-TYNE STOCK EXCHANGE.—Mr. FARADAY SPENCE, stock and share broker, Grey-street (March 16), writes—The inactivity I mentioned in my last has continued over this week. Barrow Hematite Steel ordinary shares are 130 to 132½, and preference 11 1-16. Bede Metal and Chemical shares have receded to 1 dis., at which there are still sellers. Bolckow, Vaughan, and Co.'s fully-paid shares are 27⅞, 28⅛; 12*l.* paid, 4, ½ prem.; and 5 per cent. preference, 21¼, 21½. Consett Iron shares have again risen to 13 prem., at which there are sellers; buyers bid 17½ prem. Consett Spanish Ore shares are 32*s.* to 32*s.* 6*d.* Darlington Iron shares have fallen to 3½, at which they are still offered. John Abbott and Co.'s shares have been done at 27 dis., at which there is still a buyer.

Seller at 25 dis. Palmer's Shipbuilding and Iron Co.'s A shares are 29, 30, and B 5 to 4½ dis. Skerne Irons are 3¼, 3¼. Tees-Side Iron and Engine Works ordinary shares are 1¾, 1⅞, and preference, ⅛ dis. to par. Tyne Forge old shares have been done at 6 prem., at which there are still buyers. Probable sellers at 7½ prem. The new shares have been done at 5 prem., and a few are still offered at that. West Cumberland Iron and Steel shares are 4¾, 4⅞ dis.

Crook Burn Mine share are ⅛ to ¼ dis. Green Hurth Mine shares are 8½ to 9. Hexham and Edmondbyre Mine shares 17s. 6d. to 20s. North Green Hurth Mine (1*l.* paid) shares are nominally 1½ to 1¾; the 3s. 6d. paid shares are offered at 7s. 6d. prem., whilst there is a probable buyer at a shade lower. Patteryke Mine shares are offered at ¼ prem.; no buyers at moment, but I think ⅛ prem. would be given. Tharsis Sulphur and Copper shares are 41⅞ to 42

Messrs. J. S. CHALLONER and SON, stock and share brokers, Dean-street (March 16), write:—West Cumberlands, 14¾; Bolckow, Vaughan (20*l.* paid), 2; ditto (12*l.* paid), 16½; ditto (pref.), 21¼; Chillington Irons, 2; Darlington, 3¼; Barrow Steel, 130; ditto pref., 11; Palmer, A, 27½; ditto, B, 19½; Lawes, 5¼; Langdale's, 3¾; North-Eastern Banks, 1¾ dis.; Newcastle Gas, 146, ex div.; Swan's Electric Light, par; Newcastle Chemical, 18s. 9d.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, sharebroker and ironbroker (March 16), writes:—During the past week prices have generally improved, owing to the easier tendency in the money market, as well as the improving tendency of trade. The rates for continuation to the new account, for settlement March 30, have also proved light, and if political matters remain quiet the tendency is likely to continue upwards.

In shares of coal, iron, and steel companies prices are steady. Marbella improved to 6¼, cum dividend, but are now easier at 5½, ex dividend. In the Scotch pig-iron market the price of warrants advanced from 48s. to 49s. 10½d., but at the latter buyers seem supplied, and a reaction set in. Since the money market got easier home trade has been more active, and the Cleveland market have all agreed not to sell under a fixed rate, and the advancing tendency in bringing out continental buyers. Altami are at 27s. 6d.; Chatterley Iron, 6 to 8: Cardiff and Swansea, 40s. to 50s.; Llynvi and Tondu, 6 to 6½; ditto pref. (fully paid), 30s. to 90s.; and Padeswood Colliery, 5.

In shares of foreign copper concerns prices are generally better, in sympathy with the market for that metal. Tharsis improved from 40½ to 42¼, and are now 41½ to 41¾; Bratsberg, 20s. to 30s.; and Yorke Peninsula, 3s. 9d. to 6s. 3d.

In shares of home mines there has been more business doing, and prices are slightly better. Bedford United are at 30s. to 35s.; Bwlch United, 15s to 25s.; Caron, 2s. to 4s.; Drakewalls, 10s. to 15s.; Devon Friendship, 5s. to 6s. 3d.; Devon Copper and Blende, 11s. 3d.; East Chiverton, 20s. to 25s.; East Craven Moor, 5s. to 10s.; East Roman Gravels, 12s. 6d. to 15s.; East Van, 10s.; East Wheal Rose, 12s. 6d. to 15s.; Great Holway, 4 to 5; Indian Queens, 2s. 6d. to 5s.; Langford, 5s. to 7s. 6d.; Lady Ashburton, 2s. 6d. to 5s.; Mounts Bay, 5s.; New Terras, 40s.; North Herodsfoot, 2s. 6d. to 5s.; North D'Eresby, 2s. 6d. to 5s.; Old Shepherds, 3s. 9d.; Parkas, 3s. 9d.; Pandoras, 6s. 3d.; Pen-yr-Orsedda, 10s. to 20s.; Pennant, 4 to 5; Prince of Wales, 7s. 6d. to 12s. 6d.; Parys Copper, 10s. to 12s. 6d.; Rhosesmore, 50s. to 63s.; South Devon, 17s. 6d. to 22s. 6d.; South D'Eresby, 2s. 6d. to 5s.; Tankervilles, 5s. to 7s. 6d.; Tin Hills, 12s. 6d. to 17s. 6d.; Tresavean, 7s. to 15s.; United Van and Glyn, 15s. to 20s.; West Caradon, 5s. to 7s. 6d.; West Chiverton, 2s. 6d.; West Lisburne, 7s. 6d. to 12s. 6d.; and Wheal Jewells, 5s. to 10s.

In shares of gold and silver mines there has not been much business doing, but prices are steady. Akankoos are at 6s. 6d.; Anglo-California, 3s.; Devalah Central, 7s. 6d. to 12s. 6d.; East Sheboygan, 3s.; Emma, 50s. to 60s.; Gold Hills, 10s. dis. to par; Gold Coast, par to 5s. prem.; Great Southern of Mysore Gold, 2s. 6d. to 7s. 6d.; Indian Glenrocks, 17s. 6d. to 20s.; Indian Kingstons, 7s. 6d. to 12s. 6d.; Kapangas, 5s. to 7s. 6d.; London and California, 3s.; New Callao, 5s.; New Gold Run, 1s. 6d.; Olathe Silver, 2s. 6d.; Potosi, 13s. 9d. to 16s. 3d.; Pestarenas, 4s. to 5s.; Rio Grande do Sul (B), 20s. to 30s.; Tambracherry, 15s. to 17s.; Tecomas, 2s. to 4s.; Utah Silver, 3s.; and Wala-Wynaad, 4s. 6d.

In shares of oil and miscellaneous companies there has been more business doing, but prices do not show much alteration. Lawes' Chemical ore are at 5 to 5¼, and Walkinshaw Oil, 10¼ to 11.

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and share brokers, Princes-street (March 16), write:—Home railways stocks have been firm during the past week, and prices have improved. The traffic returns to-day show a satisfactory increase. During the week Caledonian Railway ordinary stock has improved from 110⅞ to 111¼. North British from 94⅝ cum div. to 93⅞ ex div. Glasgow and South-Western from 120¾ to 121. Great North of Scotland from 58½ to 61. London, Chatham, and Dover from 30⅝ to 31⅞. Brighton (deferred) from 140¼ to 143. There has been a very appreciable improvement in Canadian railways. Grand Trunk Ordinary has risen from 16½ to 17⅛; the Second Preference from 79½ to 82, and the Third from 34 to 35¾. Great Western of Canada shares 10⅝ to 11⅛. In banks, British Linen has risen from 272½ to 273. National from 293½ to 295. Union from 24¼ to 24½. All the changes in insurance shares have been to lower prices. Caledonian Fire and Life have receded from 79½ to 78. Life Association from 27 to 26½. Northern from 52 to 51. Scottish Life from 21s. to 20s. In mining shares Tharsis have improved from 40⅞ to 42. Rio Tinto show change at 26. Cairntable Coal have declined from 6½ to 5½. Canadian Copper from 24s. 3d. to 23s. 6d. Clyde Coal from 38s. 6d. to 32s. 6d. Oakbank Oil have fallen from 40 to 36. Prairie Cattle shares have improved from 9½ to 10⅛.

IRISH MINING AND MISCELLANEOUS COMPANIES SHARE MARKET.

CORK.—Messrs. J. H. CARROLL and SONS, stock and share brokers, South Mall (March 15), write:—Markets remain steady. Great Southerns changed hands at 109¾ to 110, and Midlands were done at 84. Nothing done in Fandons or Limericks. National Banks were bought at 22¾ to 22⅞, and Provincials at 58¾. Hibernians were also done at 34⅞, and Munsters at 61⅝. Alliance Gas remain 15⅞, and Dublin Trams 10½. Lyons shares were asked for at 4⅞, and Gouldings at 8. River Steamers also enquired for at 10s. 6d., and Gas shares offered at 6¾. No change in Harbour Board debentures.

THE COPPER TRADE.

Messrs. HARRINGTON, HORAN, and Co. (March 15) write:—Chili copper charters for the first part of this month were advised on March 13 as 1900 tons fine, of which 950 tons in bars and ingots, 350 tons in furnace material for England, 600 tons bars for Contient. Price of bars was £118·15, and Exchange 35d. Since the issue of our last the Chili bar market, although subject to slight fluctuations, advanced to 65*l.* 12s. 6d. spot, and 68*l.* 10s. forward, but has since receded to 65*l.* 5s. and 68*l.* respectively, closing quiet with sellers at these prices. During the same period the sales of furnace material comprise 116 tons Mexican ore at 13s. 3d.; 88 tons Italian ore at 13s.; 100 tons New Quebrada ore (Yellow) at 13s. 3d.; 600 tons Newfoundland ore at 13s.; 300 tons Rio Tinto precipitate at 13s. 9d., direct shipment to Continent; 100 tons English, buyers' works; 35 tons, producers' works; and 100 tons, f.a.s. Hull, at 13s. 6d. per unit. There has been no Swansea sale during the past fortnight. Import of Chili copper during the past fortnight 3090 tons fine, against 535 tons fine same time last year; delivery, 1679 tons, against 927 tons; import of other copper, 929 tons, against 1015 tons; delivery, 623 tons. Arrivals here during the fortnight of West Coast S.A. produce—Cordillera, from Valparaiso, &c., with 367 tons bars and 250 tons ingots; Patagonia, with 301 tons bars and 100 tons ingots; Chevy Chase, with 38 tons bars. Chasca, with 44 tons bars; Knight Templar, from Pisco, with 262 tons ores. At Swansea—Maxima, from Tocopilla, with 761 tons regulus; Edgar, from Guayacan and Tongoy, with 700 tons bars; Pembroke Castle, from Lota, with 610 tons bars! Hawkeye, from Carrizal, with 752 tons regulus. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

	Ores.	Regulus.	Bars.	Ingots.	Barilla.
Liverpool	—	—	13,239	1087	—
Swansea	440	4,379	9,547	—	—
Total	440	4,379	22,786	1087	—

Representing about 25,932 tons fine copper, against 24,521 tons 28th ult.; 32,433 tons March 15, 1881; 33,109 tons March 15, 1880; 28,167 tons March 14, 1879. Stock of copper contained in other foreign ore and Spanish precipitate, 4770 tons fine, against 2009 tons March 15, 1881. Stock of Chili bars and ingots in Havre, 2430 tons fine, against 3951 tons March 15, 1881. Stock of Coro Coro barilla in Havre, 30 tons fine, against 47 tons March 15, 1881. Stock of copper other than Chili in Havre, 500 tons fine, against 530 tons March 15, 1881. Stock of Chili copper afloat and chartered for to date, 9700 tons fine, against 11,550 tons March 15, 1881. Stock of foreign copper in London, chiefly Australian, 8665 tons fine, against 8367 tons March 15, 1881.

According to the Board of Trade Returns the total imports and exports into and from this country for the first two months of the following years were—

IMPORTS.	1880.	1881.	1882.
Copper in ores ..... Tons	2,256	1,573	1,640
Copper regulus and precipitate	3,907	3,930	4,922
Bars, cakes, and ingots	4,906	4,848	4,430
In pyrites (estimated)	2,567	2,057	2,976
Total	13,636	12,408	13,968
EXPORTS.			
English copper, wrought and unwrt..Tons	4,682	4,930	4,202
Foreign copper, unwrought	2,822	1,403	1,928
Yellow metal	2,541	2,528	2,518
Total	10,045	8,861	8,648

According to advices from Valparaiso the comparative exports of fine copper from Chili and Bolivia to all parts of the world during the following years were—

1881.	1880.	1879.	1878.	1877.	1876.
38,160	43,135	49,560	46,931	45,561	50,911

The relative proportions per cent. of the different descriptions of copper being—

	1881.	1880.	1879.	1878.	1877.	1876.
Bar copper	82·276	80·76	80·10	82·65	75·325	79 93
Copper regulus	15·820	16·29	17·20	15·47	18·682	16·73
Copper ore	1·904	2·95	2·70	1·88	5·993	3·34
Total	100	100	100	100	100	100

STEEL CHAIN.—Messrs. Joseph Mitchell and Co., engineers and machine makers, Sheffield, have just completed for Earle's Shipbuilding Company, Hull, a steel chain of remarkable dimensions, certainly the longest of its kind ever made. It is manufactured from Siemens' steel, is 180 yards long, and consists of upwards of 3200 links, held together by over 850 steel pins. The chain is calculated to sustain a weight of 60 tons, and is intended to be used for lifting purposes.

THE COAL TRADE.

Mr. J. R. Scott, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London, by sea, railway, and canal, during February, 1882:—

IMPORTS.

By Sea.	Ships.	Tons.	By Railway and Canal.	Tons	cwt.
Newcastle	199	183,854	Lond. & North-Western.	124,364	17
Sunderland	128	103,431	Great Northern	83,025	0
Seaham	27	15,163	Great Western	83,765	0
Hartlepool	64	25,821	Midland	182,556	0
Middlesborough	3	2,531	Great Eastern	54,670	8
Scotch	10	5,363	South-Western	6,929	7
Welsh	30	26,977	Lond., Chat., & Dover	—	
Yorkshire	27	4,158	South-Eastern	1,746	19
Small coal & cinders	16	5,955	Grand Junction Canal	215	10
Colonial	—	—			
Total	504	378,251	Total	537,873	1
Imports—Feb., 1881	459	348,424	Imports—Feb., 1881	682,085	5

Comparative Statement, 1881 *and* 1882.

By Sea.	Ships.	Tons.	By Railway and Canal.	Tons	c.
Jan. 1 to Feb. 28, 1882	982	764,003	Jan. 1 to Feb. 28, 1882	1,091,693	6
Jan. 1 to Feb. 28, 1881	853	667,455	Jan. 1 to Feb. 28, 1881	1,063,773	1
Increase—1882	129	96,548			
Decrease—1882	—	—	Increase—1882	27,920	7

EXPORTS.

Railway-borne coal passing "in transitu" through district.....Tons			88,468
Sea-borne coal exported to British Possessions, or to foreign parts, or to the coast	79,603		
Ditto sent beyond limits by railway	23,334		
Ditto by canal and inland navigation	1,960	=	104,897
Railway-borne coal exported to British Possessions, or to foreign parts, or the coast	43,293		
Ditto, by canal and inland navigation	364	=	43,657
Sea-borne coal brought into port, & exported in same ships			254
Total quantity of coal conveyed beyond limits of coal duty district during February, 1882			237,276
Ditto, during February, 1881			212,685

Comparative Statement, 1881 *and* 1882.

Total distribution of coal from Jan. 1 to Feb. 28, 1882			456,469
Total distribution of coal from Jan. 1 to Feb. 28, 1881			449,566
Increase in the present year			6,903

General Statement, 1881 *and* 1882.

Increase in coals imported by railway	27,920		
Increase in coals imported by sea	96,548	=	124,468
Less increase in coals exported			6,903
Total increase in trade within the district during 1882			117,565

DYNAMICAL METALLURGY, OR MECHANICAL ORE CONCENTRATION.

In a treatise on this subject at present appearing in the New York Mining Record, from the pen of our excellent correspondent Mr. F. M. F. CAZIN, consulting mining engineer, he refers to the successful and large practical application of hydraulic ore concentration as proof for the soundness of the system. He remarks that it is part of the disposition made for the present treatise, that after absolving the theoretical investigations, and after describing the apparatus rationally constructed, to also describe existing prominent establishments for hydraulic ore-dressing. It is on account of the eminently practical turn of the American intellect that he may not defer to show practical results until such description will be properly placed. Therefore he intends at the present stage of discussion to hold a review of the practice of hydraulic ore-dressing in Europe and the United States, showing, first, the importance of the science and trade in national economy, but at the same time the imperfections locally, the results of habit, and indulged in contrary to the application of well developed theories. Though hydraulic ore-dressing has taken absolute precedence theoretically and practically, before pneumatic ore-dressing, it in no wise has attained practically the acme of rational perfection, and to remind those interested of the shortcomings of their practice is equally a matter of necessity as to show the shortcomings of the pneumatic system against the hydraulic system. He then proceeds to show the practice of hydraulic ore-dressing by rational division.

Cornwall, the seat of mining industry since the Phœnician ships rounded its coast, produces, he says, at the rate of 25,000,000 pounds of tin per annum, not an ounce of which is obtained but by applying to its ores the system of hydraulic concentration. In Cornwall the practice of mechanical ore concentration, with the use of water as the medium (hydranlic concentration), is as old as its mining industry. With a low price for skilled labour of good quality, Cornwall has hesitated for a long time, and hesitates as yet, to introduce automatical machinery for ore-dressing. The old buddles, tossing tubs or dollies, trunks and racks hold as yet their own without systematic arrangement. Nevertheless, the results obtained by the skill of the labourer (tin dresser) are of such good quality that in Cornwall less than in any other mining district the necessity of improvement is felt. We possess from the pen and pencil of John Darlington, sen., in Ure's Dictionary of Arts, Manufactures, and Mines, a very meritorious description of the Cornwall practice in ore dressing. Since the development of the "theories in hydraulic ore concentration" the competent ore dresser never relies on one operation alone for effecting the separation of solids by their density (compare page 23, first column)—"Alternate sorting and classification," sorting being understood to express sorting by size, and classification being understood to express division by equal falling quality. This alternation of action may be called "the modern system of ore dressing."

It may be distinctly stated that no ore dressing can be thoroughly succcessful unless the one of these alternate actions prepares the material for the other action, the second action being always the concentration or separation proper. It is the total absence of this systematic action in the treatment of the finer sizes which has been and is at present characteristic of the Cornwall ore-dressing system. John Darlington, in 1864, estimated the value of the ore treated in hydraulic dressing at 4,000,000*l.* sterling in the United Kingdom alone. This figure should serve as an encouragement to mine captains in Cornwall to bestow some attention to the benefit to be derived from feeding their buddles with equal falling (classified) material (and with only one class at the time), because a general saving of 1 per cent. would be a saving of 40,000*l.* sterling in the Kingdom.

In this warning he does not rely on John Darlington's description alone, but he has, as a careful collector of evidence, before him also minutes of the meeting on April 24, 1877, of the Mining Institute for Cornwall, when Capt. William Teague, of Tincroft and Carn Brea, read a paper on "Tin Dressing." Though buddles were largely, and sometimes roughly, handled in the meeting, and though Frue's Van were unjustly condemned on account of improper trial, there is nowhere in the entire discussion the slightest evidence that any of the engineers present were aware of the real cause of losses experienced on their dressing-floors, as it must be found in the neglect to properly prepare their material for their buddles. Capt. W. Teague, jun., preferred to let the stuff go directly from the stamps into the buddles, others preferring to first settle the stuff in a pit, but not one of the learned members of the Institute entered his voice to declare that neither the one nor the other be the proper mode of action. In thus showing the important practical application of the system of hydraulic ore-dressing to the tinners of Cornwall, and simultaneously specifying its deficiencies. He intends to show that practice alone cannot fully show the merits of the system, but that in its practice there is also wide room for improvement.

Capt. Teague, sen., probably stated the truth when at the same meeting he estimated the loss in treating tin ore containing 25 lbs. to the ton (1·25 per cent.) to one-eighth, or to 12½ per cent. of contents, leaving 87½ per cent. in the concentrates. Thus even in its local imperfection, and treating very refractory material, hydraulic ore dressing shows results far surpassing any result obtained in pneumatic concentration. And, indeed, the tinstuff is treated mainly in very fine sizes or as dust, which the Krom system has no way to operate upon.

In the Lake Superior district in 1881 over 600,000 lbs. of copper, having a value of over $10,000,000, were produced. Nine-tenths thereof were obtained by hydraulic ore dressing. The method applied is a fine imitation of the Cornish practice, with the sole distinction that, fostered by the higher difference in density between ore and gangue, as well as by the wasteful practice, being the result of good ore bodies, as well as of the protection tariff, the neglect of even sorting the sands has been added to the Cornish neglect of classifying the slimes. A loss in tailings of very near 30 per cent. of the contents of the ore stamped is the consequence of such unsystematic treatment. There is absolutely no possible doubt but that the loss thus incurred can be reduced to about one-half by proper systematic action and by substituting some of the apparatus in use by better ones. In other words, $1,500,000 may be yearly saved by rational improvements, based on well-kown principles and effected by existing and thoroughly tested apparatus. Notwithstanding the great loss attributable to neglect on the part of mill-owners, the results obtained, and resting absolutely on hydrulic ore dressing, prove the importance and soundness of the system.

MALLEABLE WHITE BRONZE.

A new white metallic alloy, in the manufacture of which no nickel is required, has been patented by Messrs. REYNAUD and Co., of Paris. This white metal and malleable bronze is produced by the decoloration of copper by means of ferro-manganese of high standard. They commence by reducing binoxide or protoxide of manganese in a blast, reverberatory, or other furnace, and when they have obtained ferro-manganese very rich in manganese of a composition of metallic mangenese 80 parts, iron 14 parts, carbon 6 parts = 100 parts, they make the first melting in a reverberatory furnace; they mix together abont 60 per cent. of ferro-manganese of the nature or quality described, and 40 per cent. of copper, adding the necessary and ordinary fluxes. When the mixture is perfectly melted on the hearth they run it into ingots. The composition gives a metal as white as silver, and as malleable as German silver generally obtained with nickel. In order to obtain a laminable white metal in plates, they again melt the metal obtained as above, and add about 20 to 25 per cent. of zinc and brass. They run it into ingots, and after re-heating, they laminate it in the ordinary manner The re-heating is thus effected:—They heat the metal to cherry red, and then submit it to a current of carbonic acid, which removes the slight impurities which may remain in the metal. This metal is inoxidizable with the fatty acids and stearic acid.

Experiments which have been made have shown that armour-plates can be made with the first metal (from the first melting) A plate of the metal cast and rolled to a thickness of 2 in. has been tried against a 2-in. plate of steel similar to that which forms the armour plates of ships. These plates have been fired at with a Gras gun at an equal distance, with the result that the steel plate was broken into several pieces, whilst that made according to this invention was hardly dented. It would be superfluous to enumerate the numerous applications of this white metal, whether for mechanical articles or for sadlery, or railway or other carriage handles; it may also be employed to make forks, spoons, and other rolled and stamped articles. When they wish to obtain a malleable or laminable bronze they proceed differently. They take protoxide of manganese (Mn O) and protoxide of iron (Fe O) with the necessary amount of fuel to reduce these two oxides to the metallic state, and add the necessary amount of copper in the proportions above indicated. When the two metals are melted they obtain a malleable bronze resembling aluminium bronze. All the alloys of copper and manganese are ductile; these two metals have much affinity for each other; without the presence of copper only a small quantity of manganese is reduced; when, on the contrary, they operate with ferro-manganese of the nature and quality above described they can add any quantities that may be desired, and they obtain a metal which is very white and very ductile. This ferro-manganese perfectly declorises the copper.

PRODUCING SOUND INGOTS AND CASTINGS OF STEEL

The mould for the ingot or other casting is, according to the invention of Mr. E. A. KRUPP, of Essen, so constructed that it can, when closed, withstand a very considerable internal pressure. Immediately after the metal has been poured into the mould, communication is made between the interior of the mould and a vessel containing a liquid or solid substance of such a nature as to be in the gaseous state under ordinary atmospheric pressure and temperature carbonic acid may be employed for this purpose. According to the temperature to which the reservoir or the substance therein if exposed, and according to the properties of the substance employed, a gas pressure of any required strength may be thus applied to the molten metal in the mould. As the applied pressure must be regulated within limits decided upon as desired, the above-mentioned reservoir is placed in a bath of water, oil, or other suitable fluid, which by the admission of steam or water thereto can be heated or cooled as required. At the ordinary temperature of the atmosphere—say, at 60° F. —the pressure obtained by the liquefied carbonic acid is about 52 atmospheres, at 86° about 74 atmospheres, and at 212° F. the pressure is found to rise to about 400 atmosphere, and at 400° F. even to 800 atmospheres. Where a satisfactory result is found on examination of the ingot to have been obtained by the lower pressures, it is obvious that the higher pressures should not be resorted to.

The amounts of the pressures depend upon and are influenced according to the extent to which the reservoir is filled, and the temperatures when they are higher than 30° C. or 86° F., termed the critical point. For the purpose of enabling the pressure to be most advantageously applied, the upper part of the molten metal is kept hot as long as possible, while the ingot is gradually and evenly cooling and contracting by providing the upper part of the mould with an interior lining of refractory material. An equivalent or additional means for the same important object or end consists in pouring in a layer of molten slag on to the surface of the molten metal immediately after it has been poured into the mould, and admitting the gas pressure into same.

Another equivalent or additional method of effecting the like object, but one less advantageous, may be used, and consists in making use of a thick cover of a refractory material which is a bad conductor of heat. This cover is dropped on to the top of the molten metal or slag. The pressure is maintained on the metal in the mould until there is no further tendency to the formation of hollow spaces or pores in the ingot or casting. It has been in some cases proposed to use linings of refractory material, which practically surround the molten metal in the mould, but the action of such material at the lower part would be disadvantageous and defeat the object of this invention, which is to provide for the pressure being applied properly; and to enable this to be done the molten metal is kept as hot as possible at the upper part of the ingot or mould, while the lower part is cooled or allowed to grow cool.

SUPPLYING AIR TO BOILER FURNACES.—The object of the invention of Messrs. D. SOWDEN and SONS, of Bradford, is to supply air to boiler and other furnaces in such a manner as to consume fuel and coal of a low quality, and in a great measure consume the smoke arising therefrom. They accomplish their object by mounting a series of short conical pipes of different sizes, one pipe partly inserted into the other, but leaving a space around same for the air to pass. One end of the largest conical pipe is attached to a pipe that is connected to a plate closing the front of the ashes pit, or to what is known as the blow hole in a cupola furnace; into the smallest conical pipe is inserted a steam jet, which blowing into the same causes the air to rush into the pipe through the spaces before mentioned round the series of cones, thus supplying air to the furnace.

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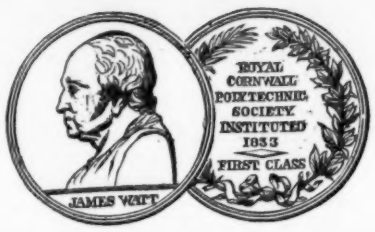

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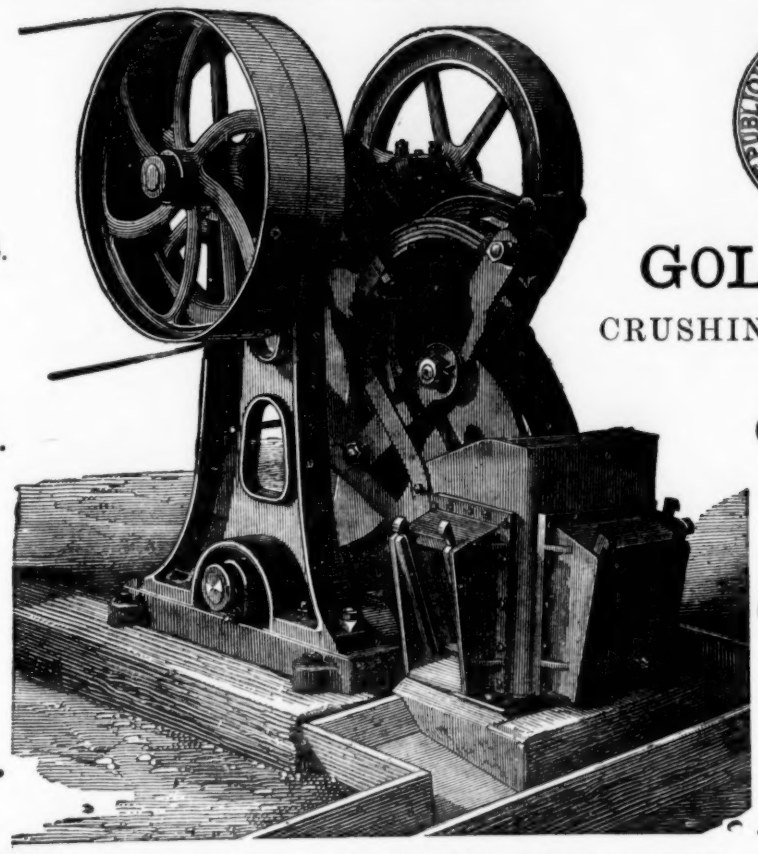

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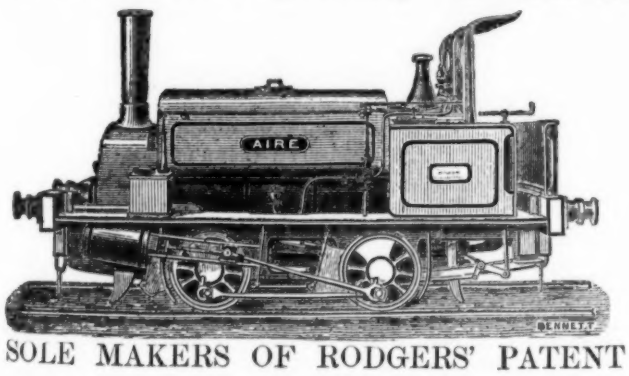

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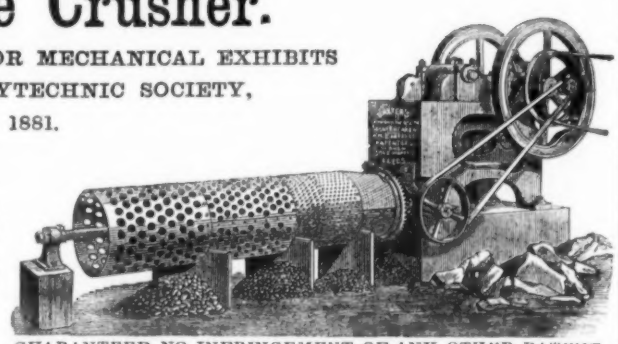

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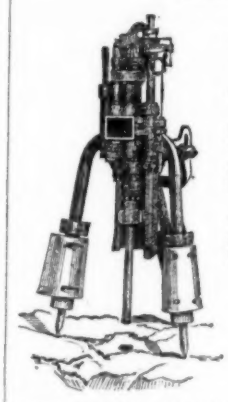

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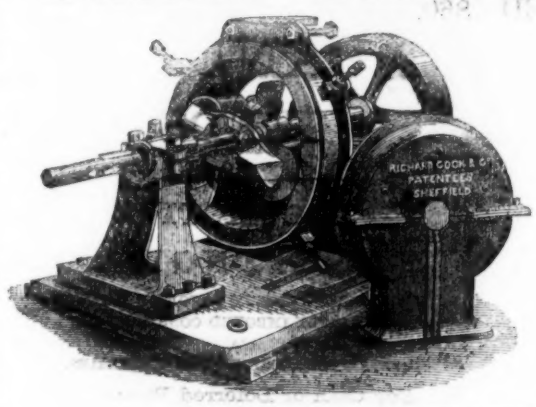

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